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STEEL

FOR FORTY-EIGHT YEARS—IRON TRADE REVIEW

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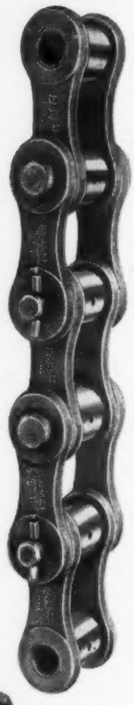
PRODUCTION · PROCESSING · DISTRIBUTION · USE

2 MILES HIGH, 2 MILES DEEP, OR IN HEAVY TRAFFIC...

YOU'RE MONEY AHEAD

BY USING

NICKEL ALLOY STEELS



BORING 2 MILES down through rock puts tremendous stresses upon oil well machinery. To shoulder such loads the Baldwin-Duckworth Chain Corp., Springfield, Mass., has developed what is said to be the strongest chain of its type ever built. With links and pins of 1.50-2.00% Nickel alloy steel, tests show a minimum ultimate strength of 185,000 lbs. Baldwin-Duckworth also builds conveyor chains from "18-8" Nickel-chromium stainless steel to resist corrosion and withstand elevated temperatures. By minimizing causes of repairs and replacements, Nickel saves you money.

GIVING WINGS to business—every plane built relies on Nickel alloy steels to assure great strength without excess weight. Wherever metals carry high loads or transmit heavy power loads, there Nickel is needed. Important also to the aircraft industry is the increasing application of corrosion resisting steels containing 8% Nickel for wings, tail assemblies, floats and other structural components which must be strong, durable, light in weight, and economical in maintenance.

LIGHTENING HAULING COSTS through Manhattan's congested traffic, a fleet of these new Gar Wood self-loading, self-dumping trucks on GMC chassis is now saving money for New York taxpayers. These lighter, stronger bodies are of Yoloy, a high tensile Nickel-copper steel produced by The Youngstown Sheet & Tube Co. In addition to high strength/weight ratio, Yoloy Nickel alloy steel provides resistance to both abrasion and corrosion. Have you asked for information about the newest uses for Nickel in your industry?

THE INTERNATIONAL NICKEL COMPANY, INC., 67 WALL ST., NEW YORK, N. Y.

STEEL
PRODUCTION • PROCESSING • DISTRIBUTION • USE

As the Editor Views the News

■ STEEL'S study of past trends reveals that expansion in the autumn months (p. 15) usually continues through the early months of the succeeding year, and at an accelerated pace. If 1939 follows the traditional pattern, a moderate improvement, at least, may be expected. Re-establishment of business confidence, which has gained much impetus since the Nov. 8 elections, should cause release of much pent-up business. Only one-fifth as much has been spent for new enterprise and expansion during the past nine years as was spent in the nine years preceding 1929. . . . STEEL'S index of industrial activity (p. 33) now stands at 99.2 per cent. This compares with 84.9 a year ago, but is still about 25 points below the 1937 peak.

• • •

Industrial construction, says one authority (p. 16), is increasing. Our national defense program is gathering impetus. Three battleships (p. 25), to cost $225,000,000 complete, have been placed under contract and a fourth will be placed soon. It is estimated (p. 16) that about 12,000 airplanes will be added for national defense in the next five years. . . . The American delegation (p. 25) sailed last week to attend the eighth Pan-American conference, at Lima, Peru. Although labor is represented by two delegates, one from CIO and one from AFL, only one man capable of representing American business was included. Well-known economists fear (p. 27) that the work of the national economic committee is a prelude to attempted federal control of industrial pricing policies.

Millions for Defense

• • •

Incentive taxation, according to testimony before a senate finance subcommittee, is seen by some authorities (p. 17) as a means of encouraging re-employment of idle workers and by others as a form of penalty against certain industries. Profit-sharing systems are desirable, according to some industrial spokesmen. . . . Contrary to some views, the small manufacturer is not at the mercy of the large manufacturer. One student (p. 22) holds that size is no factor in success, and mobility and new ideas often give the advantage to the little fellow. First of 12 units of prefabricated farm buildings was shipped last week (p. 23) by a southern steelmaker. Each group consists of five buildings requiring a total of 12½ tons of steel.

Differ on Tax Credits

• • •

Many companies unable to obtain a satisfactory volume of business in recent years can benefit, according to one authority (p. 36) through sales stimulation by means of development engineering. . . . Recent developments in pulverized coal are held as heralding wider use of this fuel (p. 38) in open-hearth and other melting and processing furnaces; one factor is that coal is an economical fuel on the basis of heat values. . . . Much flat stainless steel is used in fabricating dishwashing machines. One company has developed fixtures (p. 45) that prevent distortion in welding thin sheets. Other problems have been solved by the use of special equipment. . . . New metal products (p. 60) include steel step-ladders which fold so as to occupy little space.

Development Engineering

• • •

Cost of fabricating procedure has been reduced by one company which produces steel lockers. A natural series of swings and turns (p. 47) permits forming of doors in only four handling operations. Combining work on one press has reduced press time 60 per cent. . . . A large shrink-fit job in recent bridge construction was accomplished (p. 48) by using dry ice without alcohol. . . . A piston ring manufacturer employs a heat treating process which produces a thin black magnetic oxide surface (p. 50) which serves as a polishing agent and prevents cylinder scuffing and scoring. Other applications are seen for such films. . . . Cost savings have been effected at a new truck engine plant (p. 53) by locating all assembly and feeder lines on one floor. . . . Graphite (p. 56) is a good lubricant for locks.

Fabricating Cost Cut

E. L. Shaner

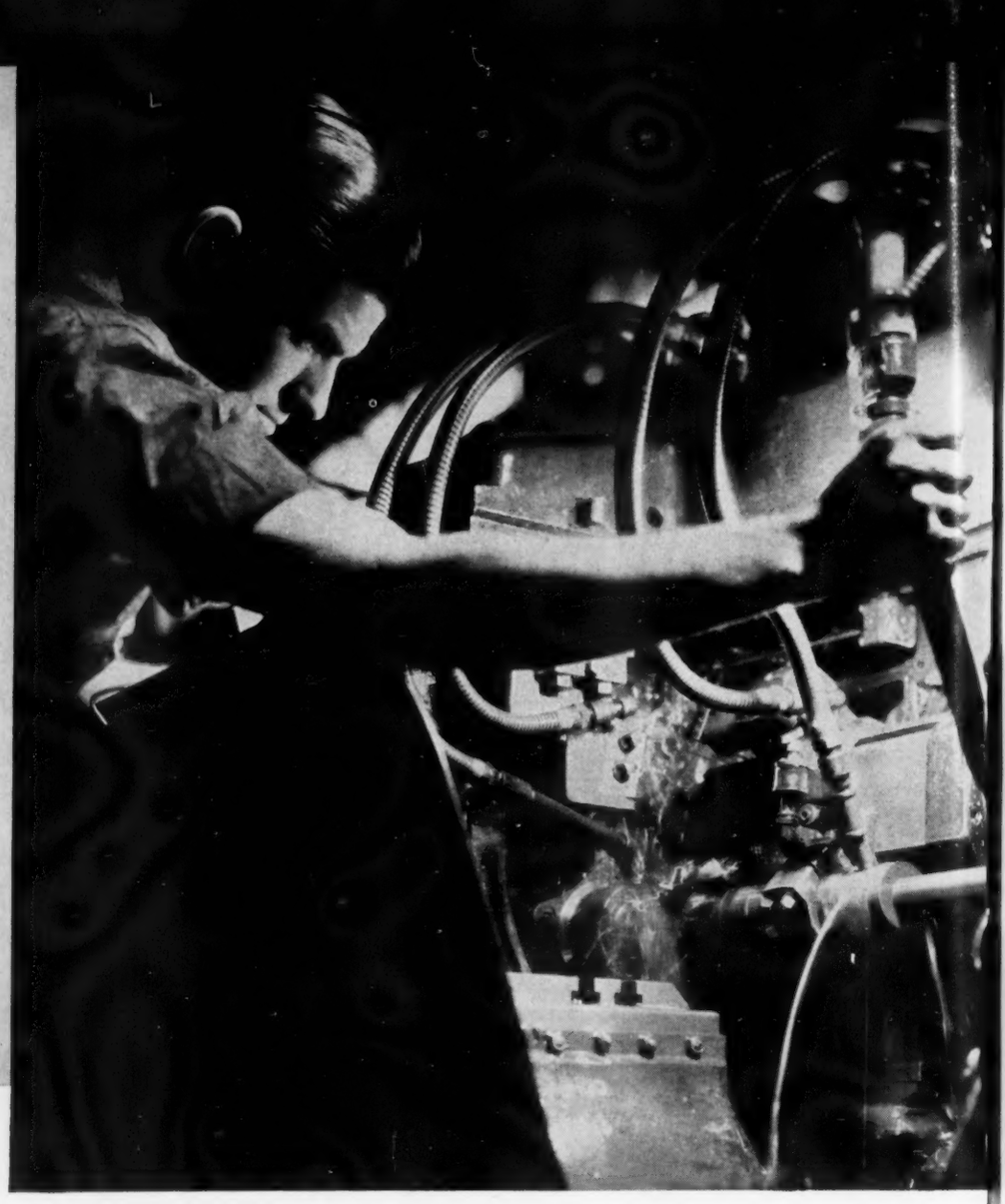
25% TO 50% BETTER MACHINABILITY

INCREASES TOOL LIFE

ALL OPEN HEARTH PHYSICAL PROPERTIES

STANDARD HEAT TREATMENT METHODS AND RESULTS

INCREASES PRODUCTIVITY AND EFFICIENCY OF YOUR PRESENT SHOP EQUIPMENT



If Your Product Is Machined

LEDLOY Will Cut Its Cost

If any steel product made in your plant requires extensive machining, then Inland Ledloy offers you an amazing new source of cost reduction. The amount you can save will be proportionate to your machining costs. Inland Ledloy may cut them 25%, or more.

Mr. "X" Discovers Ledloy

From a Forging Company, his regular source of supply, Mr. "X" ordered some 3⅛" rounds, which had been forged to this size from a 4" x 4" Ledloy billet rolled by Inland. He machined three large washers from one of these rounds in less than five minutes, as compared with a minimum of 17 minutes required with ordinary steel.

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No Change in Methods

Inland Ledloy is open hearth steel of any analysis that contains a small amount of lead, so finely dispersed that the lead has no effect upon any of the superior physical or heat-treating qualities of the steel. You treat it the same as you would any ordinary open hearth steel. But it machines 30% to 60% faster and better!

For complete information including test and practical production data, write for the new Inland Ledloy bulletin.

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SHEETS STRIP TIN PLATE BARS PLATES FLOOR PLATES STRUCTURALS PILING RAILS TRACK ACCESSORIES REINFORCING BARS

November Steel Rise Sharpest in 20 Years; Sentiment Much Improved

■ STEEL ingot production in November has increased more rapidly over October than in any corresponding period in the past two decades.

Estimated output for November at 3,618,000 tons compares with October's 3,117,934 tons, a rise of 16 per cent. October in turn gained 17.3 per cent over September.

In only eight of the past 20 years has November production exceeded that for October.

With but one exception, these autumn expansions have continued through the early months of the following year—at an increased rate. The exception was 1931 when the general trend was falling sharply through the summer and fall and was followed by the deep depression of 1932.

November, 1934, ingot output gained 12.8 per cent over October and heralded the 1935 recovery.

In the fall of 1935, operations again rose (November 4.1 per cent over October) and ushered in 1936, a fairly active year.

Going back to the early 20's November production in the depression year of 1921 showed a 2.6 per cent gain over October; production in 1922 almost doubled that of 1921.

A slight rise in November, 1932, was followed by an active year in 1923.

Gains in November in 1924 and 1925 were followed by good years in 1925 and 1926.

If 1939 follows the traditional pattern, then at least moderate improvement may be expected.

Supporting this outlook are many other factors: The vast improvement in sentiment since the elections, the enthusiastic public reception of new automobile models, an increase in inquiries for machine tools and equipment, a scheduled increase in construction activity and a national defense program promising a considerable volume of materials and equipment.

May Spur New Prosperity

Some economists hold the recovery during the last half of 1938 and its assured continuance during the early months next year may set off a greater program of expansion and rehabilitation.

How large this may be is indicated by the fact that only one-fifth as much has been spent for new enterprise and expansion during the past nine years as was spent in the nine years preceding 1929.

That much of this modernization cannot be longer deferred is indicated by announcement of large spending programs by the oil industry, paced by Standard Oil of New Jersey's $195,000,000 schedule.

Machine tool builders report a "tremendous" potential demand for replacement equipment, to be released when business confidence is re-established.

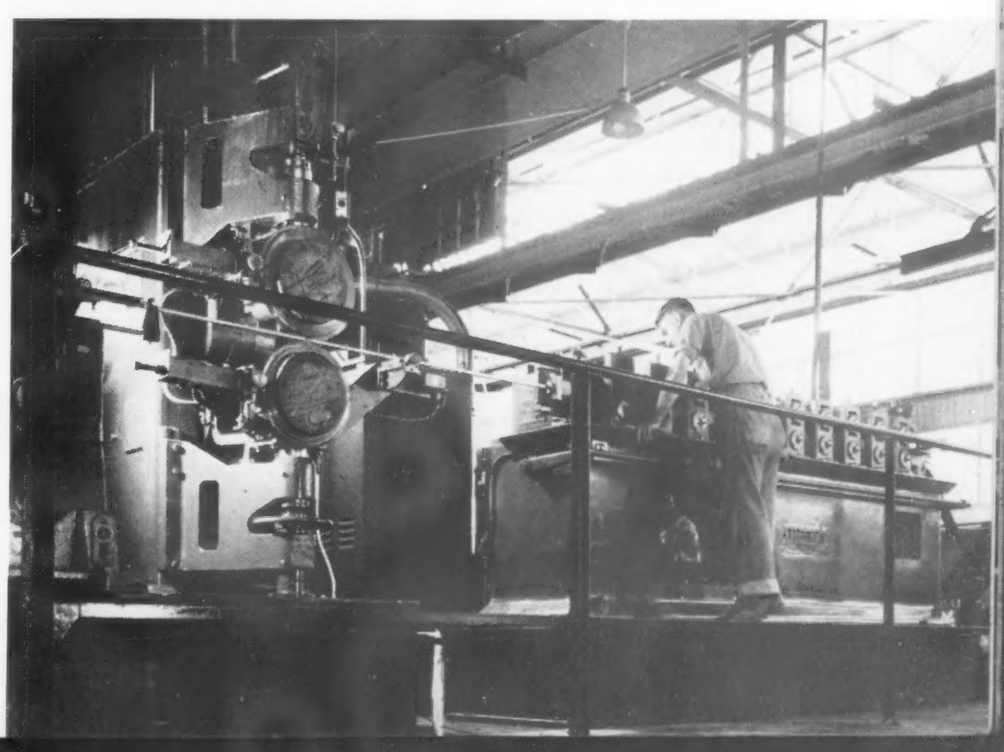
Not to be underestimated is the encouragement given business and industry by conservative gains in the elections early this month. While not yet out of the New Deal woods, private enterprise has been stimulated, sentiment has bounded upward. Developments within the past ten days have indicated the administration may accept its new mandate by concentrating on national defense and foreign problems and will be less zealous for rapid social reform.

As in the preceding recovery, automobiles apparently are stepping

◆

Straight Line Continuity

■ At General Motors' new Ternstedt plant, Trenton, N. J., where automotive body hardware and fittings are made, equipment is set in line for continuous production. A typical example is this 10-stand roll forming machine producing U-shaped steel roof reinforcing bows and feeding them into the rotary seam welder at the left. From there, material passes directly on to other fabricating machinery



into the lead. With new models introduced and the annual motor shows behind them, automakers are getting into high production gear. Output for the last three months this year is estimated at 1,100,000 cars and trucks, with prospects for continued active demand through the spring.

Engineering construction awards for 1938 to date exceed those for the comparable 1937 period by nearly 10 per cent.

A large volume of WPA construction will be under way by Jan. 1 and is expected to require at least 1,000,000 tons of steel in the next 18 months.

Estimates of the number of airplanes to be built for national defense purposes during the next five years rose to 12,000 last week. This with the fighting ship program and other national defense programs assures a fair volume of both steel and tools.

Miscellaneous light industries which first reflected the upturn last summer continue to show moderate improvement.

Low inventories of both finished goods and raw materials presage an early reflection of any upturn in mill demand.

Industrial Construction Contracts Increasing

■ A distinct improvement in the outlook for industrial construction has been noted from coast to coast, according to George A. Bryant Jr., executive vice president, The Austin Co., engineers and builders, Cleveland.

"Confidence that business generally is headed for improvement has stimulated interest in new construction to meet recognized needs in manufacturing and distributive fields," he said. "The past two months have produced more than a score of contracts, ranging from $50,000 to $1,000,000 in these fields in various sections of the country."

Among the projects in these contracts were coach shops for two railroads in the Middle West, steel warehouses for several companies in the Detroit area, plants serving the automotive industry in Indiana and Missouri, container and packaging plants in the Far West, a large laboratory and office building for the motion picture industry, and warehousing facilities for a large metal fabricator at St. Louis.

■ Gas, tar, oils and chemicals valued at about $155,500,000, were produced by the steel industry in 1937 as by-products from manufacture of coke for blast furnace fuel, the American Iron and Steel institute reports.

LABOR

EXTENDS TIME FOR REPLIES TO WAGES-HOURS REPORT

■ PUBLIC contracts board, which handed down a tentative report on steel wages and hours (STEEL, Nov. 14, p. 28), has extended the time for companies to file briefs, from Nov. 28 to Dec. 10.

D. A. Williams, president, Continental Steel Corp., Kokomo, Ind., last week filed a protest with the board. He requested "that the minimum wage which is adopted be one which will recognize the necessity for differentials to offset our other competitive disadvantages, which are not subject to change or control."

He stated the 62½ cents per hour rate would compel his mill to adopt the same wage structure "as our largest and most favorably located competitors, in spite of the many other competitive disadvantages which we cannot overcome.

"This wage factor is so important that we think such a requirement will constitute a serious threat to successful operation of small companies upon which many communities depend chiefly for employment, and in some cases would actually imperil their existence."

He expressed belief in the theory of reasonable supervision to correct extremely low wages and long hours, "practices which have hindered progress."

"We contend, however, that to adopt a minimum wage requirement without geographical differentials, which is in fact the minimum wage paid by those industries which are most favorably situated due to location and resources, will actually destroy many such companies as ours, and will defeat the purpose of such legislation by eliminating jobs and increasing unemployment."

BAR WAGE CARD STEADY

Puddlers' and bar mill workers' wages under the Amalgamated association scale will remain unchanged for December. Card rate holds at 2.25 cents for boiling, bar and 12-inch mills, and 2.35 cents for guide and 10-inch mills. The card rate has been unchanged since July.

NO WAIVERS FOR OVER-TIME

Employers cannot disregard the wage and hour law merely because they obtain consent of their employes by the waiver of an overtime payment, Elmer F. Andrews, administrator, said last week.

"It has come to my attention that certain employers have been contemplating having a waiver of overtime payment stamped or printed on pay checks, on the assumption that acceptance will result in waiver of rights given by the statute. Employers who may be proceeding on this assumption will find themselves in clear violation of the law."

PENNSYLVANIA STEELWORKS EMPLOYMENT INCREASED

October index of employment for the iron and steel industry in Pennsylvania, compiled by Federal Research bank of Philadelphia, showed increases over September but material declines from October, 1937. With the average of 1923-25 as 100, indexes for various divisions, with percentage of gain or less, are as follows:

	Index Oct. 1938	Per Cent Gain or Loss Sept. 1938	Oct. 1937
Iron and steel industry	63.8	+2.2	—29.2
Blast furnaces	35.2	+7.6	—42.9
Steelworks and rolling mills	60.7	+3.2	—27.1
Forging shops	61.3	—5.1	—32.3
Structural fabricators	80.4	+0.4	—23.9

England Orders 80 Bombers in Canada

■ Canadian Associated Aircraft Ltd. has been awarded $10,000,000 contract by the British government for 80 bombing planes to be delivered in 1940. This company was organized and is controlled by Canadian Vickers Ltd., Canadian Car & Foundry Co., Fairchild Aircraft Ltd., National Steel Car Corp., Fleet Aircraft Ltd., and Ottawa Car & Mfg. Co.

Bristol 1000-horsepower engines for the planes are to be supplied by England. Assemblies will be made at two $500,000 plants to be constructed by the Canadian company at St. Hubert, Que., and Malton, Ont.

Parts will be produced for the St. Hubert plant by Canadian Vickers, Canadian Car & Foundry, and Fairchild Aircraft. The Malton plant is to assemble parts built by National Steel Car, Fleet Aircraft, and Ottawa Car.

It was announced that in addition to the Associated company's two new plants, the participating firms will require plant expansions and new equipment. Additional awards to Canada's aircraft builders are to follow under the British purchasing program. Expectations are that such orders may exceed $250,000,000 during the next ten years.

■ Tennessee Coal, Iron & Railroad Co.'s No. 5 limestone mine at Muscoda, Ala., has been presented the "Sentinels of Safety" trophy for its safety performance in 1937. This is the second consecutive year this mine has won in competition with nonmetal mines in the United States.

Opinions Divided on Tax Reduction For Stabilizing Employment

■ VARYING opinions on incentive taxation were expressed by industrialists appearing last week before a senate finance subcommittee. Purpose of the incentive taxation, merits and defects of which the committee are investigating, would be to bring about a general profit-sharing system in industry.

The proposal was endorsed by Walter D. Fuller, president, Curtis Publishing Co., Philadelphia, who argued its application would cause absorption of a large proportion of industrial unemployment.

Mr. Fuller contended companies should be allowed to charge off more than currently allowed for depreciation. The low rates of depreciation in force, he said, have been a major factor in the delayed recovery in the capital goods industries.

Profit-sharing systems generally were commended by the industrialists appearing before the committee; the difference in opinions arose on the question of incentive taxation.

H. Boardman Spalding, chairman of the taxation committee, National Association of Manufacturers, told the committee his group was opposed to any special tax relief or tax incentive as a means of regularizing employment—except as incentives may exist under state unemployment compensation laws.

He emphasized, however, that the association has not reached any conclusion on incentive taxation designed to promote profit sharing.

Mr. Spalding read a resolution by the association's executive committee: "We are opposed to the proposal that any special tax relief or incentive be granted to companies having regularized employment, except as they may exist under state unemployment compensation laws.

Points to Irregularities

"Any such tax treatment in the general tax laws would tend to subsidize employers who find it economically feasible to regularize production and employment at the expense of those who are unable to do so."

Senator Arthur H. Vandenberg, Michigan, a committee member, expressed "amazement" at the association's statement. Senator Vandenberg is pushing the inquiry into the possibility of tax exemptions as incentives for profit sharing.

Amendment of the social security act by inserting incentive tax clauses was hinted by the Michigan senator. Questioning Gen. Robert E. Wood of Sears, Roebuck & Co., Chicago, he brought out that "it would not be very difficult" to give credit for profit sharing in social security taxes.

George M. Verity, chairman, American Rolling Mill Co., Middletown, O., told the committee he was opposed to the incentive tax, although he strongly favored profit-sharing systems. He expressed his belief it would be equally harmful for legislation to be passed rewarding the performance of an act and penalizing the omission of an act which should be voluntary.

"My feeling," he said, "would be that you could help us more in a lot of other fields of taxation than this one. You had better let us work it out ourselves on a basis of 'root hog or die'."

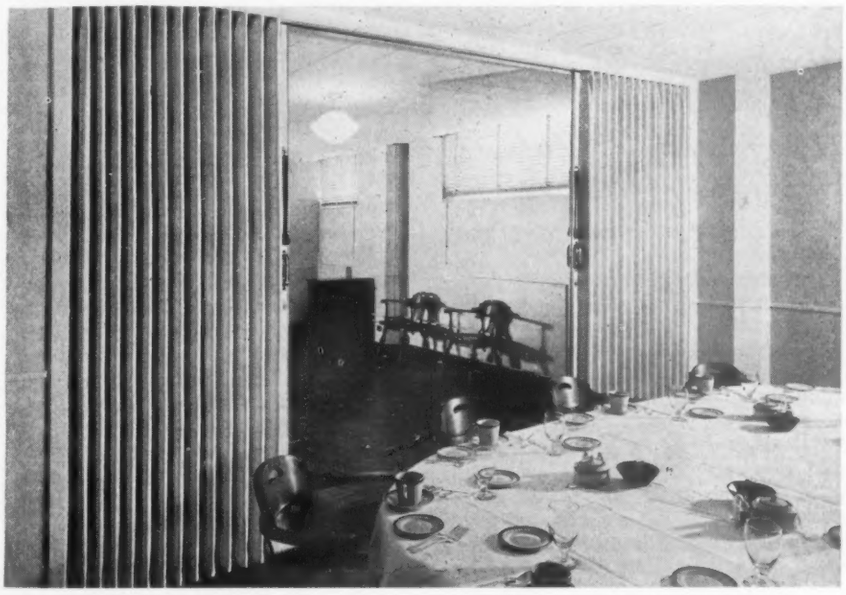
Mr. Verity pointed out that no labor disagreement has ever disturbed his company in its 38 years.

Profit sharing, in the form of direct cash incentives, has played an important part in this record, Mr. Verity said.

C. H. Murray, American Rolling Mill's personnel director, explained the company's system to the committee. Premiums for efficiency averaged 8.4 per cent of wages paid production workers in 1935, 20 per cent in 1936 and 21 per cent in 1937.

W. G. Marshall, vice president, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., outlined his company's plan for profit sharing. He said the plan added 13.3 per cent to the wages in 1937.

Wire and Velvet Make Unique Folding Doors



■ **These Modernfold doors, in which basic wire forms are covered with fabric, fold like accordion pleats on an overhead track, dividing large areas into smaller rooms in hotels, churches, schools. They are a product of New Castle Products Co., New Castle, Ind., from basic wire made by Republic Steel Corp., Cleveland**

Census Shows Gains in Pig Iron, Ferroalloys

■ Manufacturers of pig iron and ferroalloys in the United States reported large increases in employment, wages, and value of products for 1937 compared with 1935, according to the biennial census of manufactures.

Wage earners employed in 1937 numbered 23,075, an increase of 52 per cent over 15,178 reported for 1935. Wages paid, $38,001,438, exceeded the 1935 figure, $18,915,554, by 100.9 per cent. The value of products for 1937, $672,525,407, showed a gain of 79.5 per cent over the 1935 figure, $374,651,370.

The blast furnace products industry, as defined for the census, embraces establishments engaged in the manufacture, from ore and scrap, of pig iron, ferroalloys, including spiegeleisen, ferromanganese, ferrophosphorus, ferrosilicon, etc., and castings made direct from the furnace. Manufacture of electric ferroalloys is included in the "chemicals" industry. In many instances, of course, blast furnaces are operated in conjunction with steelworks, but for census purposes they are treated as separate establishments.

MEETINGS

INDUSTRIAL COUNCIL TO DISCUSS PUBLIC PROBLEMS

■ OFFICERS of organizations representing manufacturing, processing and other business enterprises will meet in the Waldorf-Astoria, New York, Dec. 5-6, for the annual meeting of the National Industrial council. The council is sponsored by the National Association of Manufacturers, which will conduct its forty-third annual meeting and Congress of American Industry at the same place, Dec. 7-9, as announced in STEEL for Nov. 21, p. 27.

Sessions will be limited to general discussion by business and professional leaders. Among topics will be: Industry-labor relations, social security problems, wage and hour act problems and public relations.

Speakers representing the metals industry will include: James W. Hook, president, Geometric Tool Co., New Haven, Conn.; Wallace T. Montague, Norton Co., Worcester, Mass.; R. R. Caldwell, general counsel, American Rolling Mill Co., Middletown, O.; and George Fonda, assistant to president, Weirton Steel Co., Pittsburgh.

ACETYLENE ASSOCIATION TO CONVENE IN HOUSTON

Thirty-ninth annual convention of the International Acetylene association will be held in Houston, Tex., March 8-10. Headquarters will be the Rice hotel.

The technical program, covering important developments in application of the oxyacetylene process for welding and cutting, will be announced soon. H. F. Reinhard, 30 East Forty-second street, New York, is secretary of the association.

MICHIGAN COAL MEETING IS MOVED UP ONE DAY

The fuel engineering conference, originally scheduled for Dec. 14 at Hotel Columbia, Kalamazoo, Mich., has been moved up to Dec. 13, according to J. E. Tobey, manager, fuel engineering division, Appalachian Coals Inc., Cincinnati. This meeting will be the twenty-fourth in a series of educational conferences on coal burning and the third in Michigan. Purchasing agents and industrial executives are invited.

CLEVELAND NAMED FOR 1940 METAL CONGRESS AND SHOW

Cleveland has been selected for the 1940 National Metal congress and exposition sponsored by the American Society for Metals in cooperation with several other technical societies in the metal field. The date is Oct. 21-25. The show will be held in Public hall, as was that of 1936. The 1939 congress and exposition will be conducted at the International Amphitheatre, Chicago, Oct. 16-20, as previously announced. W. H. Eisenman, 7016 Euclid avenue, Cleveland, is secretary of American Society for Metals.

COAL MINING CONVENTION AND SHOW IN CINCINNATI

American Mining congress has again selected Cincinnati for its annual coal convention and exposition, April 24-28. The exposition, in Music hall, will feature equipment, machinery and supplies used in the mining of coal. Julian D. Conover, Munsey building, Washington, is secretary of the congress.

Convention Calendar

Dec. 5-6—National Industrial council. Annual meeting at Waldorf-Astoria, New York. Noel Sargent, 14 West Forty-ninth street, New York, is secretary.

Dec. 5-8—American Society of Mechanical Engineers. Fifty-ninth annual meeting at Engineering Societies building, New York. C. E. Davies, 29 West Thirty-ninth street, New York, is secretary.

Dec. 5-10—National Exposition of Power and Mechanical Engineering. Grand Central Palace, New York. Charles F. Roth, Grand Central Palace, New York, is manager.

Dec. 6-8—American Society of Refrigerating Engineers. Annual meeting at Commodore hotel, New York. David L. Fiske, 37 West Thirty-ninth street, New York, is secretary.

Dec. 7-9—National Association of Manufacturers. Forty-third annual convention and Congress of American Industry at the Waldorf-Astoria, New York. Noel Sargent, 14 West Forty-ninth street, New York, is secretary.

Dec. 12-14—National Warm Air Heating and Air Conditioning association. Annual meeting at Netherland Plaza hotel, Cincinnati. Allen W. Williams, 50 West Broad street, Columbus, O., is secretary.

Dec. 28-30—American Marketing association. Semiannual meeting at Hotel Statler, Detroit. Albert Haring, 1422 West Market street, Bethlehem, Pa., is secretary.

Refrigeration Equipment Standards Published

■ Equipment standards have just been published by the Refrigerating Machinery association, Washington. They represent the first of a series to result from the broad standardization program initiated a year ago.

Part I deals with ammonia equipment under the following headings: Enclosed Ammonia Compressors, Vertical Open Shell and Tube Ammonia Condensers, Horizontal Closed Shell and Tube Ammonia Condensers, Horizontal Closed Ammonia Shell and Tube Brine Coolers (Flooded), Submerged Open Ammonia Brine Coolers, Ammonia Liquid Receivers, Ammonia Mains, Steel and Wrought Iron Pipe and Cold Storage Room Insulation.

Part II covers the results of the first studies of Freon equipment, with the following headings: Low Pressure Condensing Units (Accessories Recommended for Base Units), Freon-12 Condensers (Terminal Difference), and Freon-12 Water Coolers (Mean Temperature Difference).

FINANCIAL

■ DIRECTORS of Continental Steel Corp., Kokomo, Ind., have declared a dividend of $1 a share on common stock and the regular quarterly dividend of $1.75 per share on preferred, both payable Dec. 15. Although this is the first common dividend paid by the company this year, it is equivalent in amount to a full year's dividends at the previous regular rate of 25 cents a share quarterly.

♦

Youngstown Sheet & Tube Co., Youngstown, O., has declared the regular quarterly dividend of $1.37½ a share on preferred stock, payable Jan. 1.

♦

Directors of General Electric Co., Schenectady, N. Y., have declared a fourth quarter dividend of 20 cents a share on capital stock payable Dec 22.

♦

International Business Machines Corp., New York, declared a dividend of $1.50 a share on capital stock for the fourth quarter, payable Dec. 23. A stock dividend of 5 per cent also was declared, deliverable April 1, 1939.

Coal Exporters View Canadian Duty as Unfair

■ John D. Battle, executive secretary, National Coal association, expresses disappointment of the coal industry that the new trade agreement with Canada continues former tariff provisions on coal and coke.

"It leaves Canada free," he said, "to continue to send Canadian coal into the United States without import duty or excise tax, and freezes the present 75 cents a ton tariff imposed by Canada on bituminous coal from the United States and the $1 a ton tariff on coke. It leaves unchanged the 40-cent differential which Canada grants to Great Britain, and leaves Canada free to go on increasing the subventions which she grants to bituminous coal mined in Canada."

The new agreement eliminates a 3 per cent excise tax on coal and coke from the United States, amounting to about 8 cents per ton.

Most effect, he says, will be felt in the Pacific Northwest, where British Columbia fuel competes strongly.

Steel Exports Up, Imports Decline

■ FOR THE second consecutive month, October exports of steel and iron products, excluding scrap, showed an increase, according to metals and minerals division, department of commerce. Shipments totaled 201,477 gross tons, valued at $11,463,891, compared with 196,395 tons valued at $11,176,437 in September, and 336,993 tons valued at $23,303,927 in October, 1937.

For ten months exports aggregated 1,786,624 tons valued at $116,638,208, against the all-time record of 2,867,340 tons valued at $179,258,254 in the corresponding period last year.

Steel and iron imports in October, scrap excluded, were 20,921 tons, valued at $1,300,714. In September 23,740 tons were valued at $1,332,035, and in October last year 29,502 tons were valued at $1,743,474. Imports in ten months this year totaled 194,974 tons with value of $12,193,206, against 402,431 tons valued at $21,280,294 in the 1937 period.

Pig iron led exports in tonnage in October, with 61,339 tons, compared with 66,600 tons in September, and 66,297 tons in October, 1937. Japan took 48,637 tons, Italy 6174 and Germany 5000. Steel plates were second in volume, with 19,743 tons in October, 10,752 tons in September, and 59,088 tons in October, 1937.

Scrap exports in October were 223,954 tons valued at $3,238,232. In September these exports amounted to 149,673 tons valued at $2,093,925, and in October last year, 185,618 tons, value $3,284,109. In ten months scrap exports were 2,406,392 tons compared with 3,517,508 tons in the corresponding period of 1937.

METALWORKING MACHINERY EXPORTS GAIN IN OCTOBER

United States exports of industrial machinery in October were valued at $20,875,202, a decline of 10 per cent from $23,227,339 in the month last year, the department of commerce's machinery division reports. The October figure, however, is 3 per cent above September.

Compared with October last year a gain was made only in power-driven metalworking machinery, up 33 per cent. Textile, sewing and shoe machinery showed the greatest recession, 48 per cent.

FARM TOOL EXPORTS LOWER

Agricultural machinery exports in October totaled $5,016,518, or 27 per cent less than $6,826,322 in the month last year.

Seed separators, which gained materially in September, showed the largest decline, 77 per cent, from $190,735 in September to $43,498. Tillage implements fell off 34 per cent, from $910,366 to $598,362; harvesting machinery 24 per cent, from $387,252 to $254,646; tractors and parts 26 per cent, from $4,807,682 to $3,576,413. Exports of tractors and parts made up 71 per cent of total agricultural implement exports in October.

District Steel Rates

Percentage of Ingot Capacity Engaged in Leading Districts

	Week ended Nov. 26	Change	Same week 1937	Same week 1936
Pittsburgh	50	— 2	27	70
Chicago	58.5	— 1.5	30	77
Eastern Pa.	34	— 2	27	48.5
Youngstown	61	+ 1	37	75
Wheeling	66	None	35	89
Cleveland	77	— 2.5	28	77
Buffalo	51	+ 2	21	84
Birmingham	75	+ 7	54	74
New England	74	— 6	27	88
Cincinnati	70	— 5	29	96
St. Louis	48.5	— 3	20.6	68
Detroit	82	None	59	100
Average	62	— 1	31.5	75.5

River Shipments Gain

■ Pittsburgh district river shipments of iron and steel and products in October totaled 175,150 tons, a substantial gain over the 152,475 tons shipped in the same month last year, according to the United States engineer's office. Shipments of all products, however, declined to 2,899,400 tons from the 3,279,939 total for October, 1937.

Iron and Steel, Tons

	Oct.	Sept.	Oct. 1937
Ohio	107,950	116,200	89,750
Allegheny	3,700	3,200	1,700
Monongahela	63,500	56,000	61,025
Totals	175,150	175,400	152,475

All Products

	Oct.	Sept.	Oct. 1937
Ohio	1,055,450	966,800	1,055,546
Allegheny	248,650	223,300	270,325
Monongahela	1,595,300	1,421,850	1,954,068
Totals	2,899,400	2,611,950	3,279,939

Auto Output Off

■ With many automobile plants shut down over Thanksgiving, production last week totaled 84,930 cars, according to estimates of *Ward's Reports*. This was a decrease of 11,805 from the 96,735 assemblies in week ended Nov. 19, and constituted the first reversal since the week ended Sept. 17.

	Week Ended Nov. 26	Nov. 19
General Motors	40,125	44,250
Chrysler	20,840	24,950
Ford	14,000	16,975
All others	9,965	10,560

For further comparisons see page 30.

PRODUCTION

■ STEELWORKS operations last week increased in three producing centers, declined in seven and remained stationary in two. The national rate is estimated at 62 per cent, 1 point below the preceding week. In most cases the holiday had little effect.

Chicago — Loss of 1.5 points to 58.5 per cent resulted from three interests curtailing slightly and two others adding to output.

Cleveland — Declined 2.5 points to 77 per cent, two open hearths being taken off at the middle of the week.

Detroit — Unchanged at 82 per cent, the same rate expected to prevail this week.

Central eastern seaboard—Down 2 points to 34 per cent as some mills lost time because of the holiday. An increase is expected this week when one producer adds a fifth open hearth.

Cincinnati — Dropping of one open hearth caused the rate to recede 5 points to 70 per cent.

Birmingham, Ala. — Increased 7 points to 75 per cent, with 16 open hearths active. Ensley rail mill of Tennessee Coal, Iron & Railroad Co. will start Nov. 28 on small accumulation of orders.

Buffalo — Gained 2 points to 51 per cent, as Bethlehem Steel Co. added two open hearths. Production at the middle of the week reached 53 per cent, dropping slightly when one open hearth was taken off by another interest for repairs.

Pittsburgh — Some slackening because of holiday layoffs caused the rate to decline 2 points to 50 per cent.

Wheeling — Unchanged at 66 per cent, with 26 open hearths in production.

St. Louis — Down 3 points to 48.5 per cent, one open hearth being taken off for repairs. This will be replaced by another this week.

New England — Declined 6 points to 74 per cent.

Youngstown, O. — Advanced 1 point to 61 per cent. An anticipated reduction did not materialize and furnaces scheduled were kept active. The rate is expected to continue unchanged this week. Active units include 54 open hearths, two bessemers and 14 blast furnaces.

■ Consumption of iron and steel scrap by the steel industry in 1937 totaled 38,006,272 gross tons, 4.5 per cent over 36,358,133 tons in 1936, according to the bureau of mines, department of interior. Steel ingot production in 1937 was up 5.9 per cent from 1936.

MEN OF INDUSTRY

■ GUNTHER A. JACOBS has been elected a vice president, Firth-Sterling Steel Co., McKeesport, Pa. He will continue as resident manager in Detroit and will make his headquarters at the company's new warehouse and sintered carbide plant at 8330 West Chicago boulevard.

♦

J. M. Franklin, assistant superintendent, Holt, Ala., operations of Central Foundry Co., has become general manager.

♦

James H. McGraw Jr., chairman and president, McGraw-Hill Publishing Co. Inc., has been elected to the board of the American Arbitration association, New York.

♦

C. Wesley Brainard, associated with the Union Steam Pump Co., Battle Creek, Mich., 40 years, the past 17 as president, has announced his retirement, effective Dec. 1.

♦

Austin Webster has been appointed resident sales representative in the southeastern states for the Flexible Steel Lacing Co., Chicago. He has been identified with the company 16 years.

♦

H. F. Devens, chairman of the board, Oliver Iron & Steel Corp., has changed his headquarters from Pittsburgh to the company's New York office, 50 Church street.

♦

A. W. Herron Jr., manager of wire sales since 1935, Jones & Laughlin Steel Corp., Pittsburgh, has been appointed manager of warehouse sales. He also served as district sales manager at Cincinnati for a number of years.

Mr. Herron is succeeded as manager of wire sales by J. E. Timberlake who started with Jones & Laughlin in 1919 and has been in the wire sales department since 1925.

♦

Walter Jehu has been appointed district manager at Boston for Timken Roller Bearing Co., Canton, O. He formerly was general manager, Timken Roller Bearing Co. Ltd., Toronto, Ont.

♦

Fred A. Melmoth, vice president and works manager, Detroit Steel Castings Co., Detroit, will present the official exchange paper of the American Foundrymen's association before the 1939 conference of the Institute of British Foundrymen, London, June 12-17.

♦

Frank L. Foote, formerly advertising manager, Hastings Mfg. Co., Hastings, Mich., has joined Maremont Automotive Products Inc., Chicago, as sales promotion manager.

♦

W. L. Brown, plant manager the past 22 years of the York, Pa., division, American Chain & Cable Co., has retired from active service. He will, however, remain in York in a consulting capacity. He has served 30 years with the company.

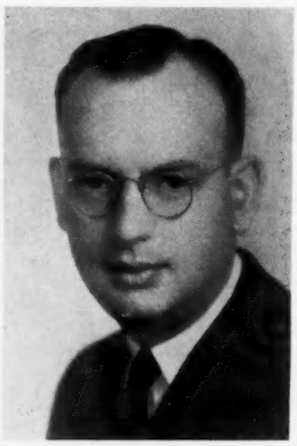
♦

Duane E. Steinle, the past year associated with the New Britain-Gridley Machine division of New Britain Machine Co., New Britain, Conn., has been transferred to Detroit, where he will be identified with the sales engineering staff.

♦

E. Kent Hubbard, of Middletown, Conn., has been re-elected president,

A. W. Herron Jr.



J. E. Timberlake

Manufacturers Association of Connecticut Inc., Hartford, Conn., for the twenty-ninth successive year. John H. Goss, president, Scovill Mfg. Co., Waterbury, has been re-elected vice president; and Harold D. Fairweather, treasurer, Colt's Patent Fire Arms Mfg. Co., Hartford, elected treasurer.

♦

Henry R. Hanson has joined the sales organization of William K. Stamets, Cleveland, machine tool dealer, and will work out of the Cleveland office. Mr. Hanson was formerly sales representative for Latrobe Tool Co. in Ohio and Pennsylvania.

♦

J. Stanley McCord has been named district manager at Philadelphia for Bliss & Laughlin Inc., Harvey, Ill., with headquarters in the Otis building. He will have charge of cold finished steel sales. Mr. McCord was formerly with the company's Cleveland office.

♦

Carl W. Schaffner has resigned as foundry manager, Spencer Heater division, Lycoming Mfg. Co., Williamsport, Pa., to become general plant manager, Hart & Crouse Co., New York. He has been succeeded by L. D. Brady, of Detroit.

♦

Walter Jeffrey has been promoted to assistant general sales manager, Leonard Refrigerator division, Nash-Kelvinator Corp., Detroit. He has been with the corporation nine years in various executive capacities.

♦

W. O. Bates Jr., who recently was transferred from the San Leandro, Calif., offices of Caterpillar Tractor Co., to become head of the patent department at Peoria, Ill., has been appointed a vice president.

♦

James P. Selvage has resigned as director of public relations, National Association of Manufacturers, effective Jan. 1, to establish his own public relations organization. He will, however, continue to serve the association in an advisory capacity.

♦

W. J. Wisner, formerly assistant manager of American Chain & Cable Co.'s plant in York, Pa., has been made manager of the company's plant in Adrian, Mich. He succeeds E. A. Heckert, who has been transferred to the electric welding plant in New York.

♦

Charles T. Ray, president, B. F. Avery & Sons Co., Louisville, Ky., has been elected president, Farm Equipment institute, Chicago. W. L. Clark, vice president, J. I. Case Co., Racine, Wis., has been elected chairman of the executive committee, members of which are: W. D. James, president, James Mfg. Co., Fort Atkinson, Wis.; C. B. Schmidt, general manager, DeLaval Separa-

tor Co., Chicago; H. S. Lord, vice president, French & Hecht Inc., Davenport, Iowa; W. A. Roberts, general sales manager, Allis-Chalmers Mfg. Co., Milwaukee; George S. Hooper, secretary, Southern Plow Manufacturers' association, and H. C. Angster, secretary-director, National Association of Domestic and Farm Equipment and Allied Products Manufacturers, Chicago. F. H. Clausen, president, Van Brunt Mfg. Co., Horicon, Wis., has been elected first vice president of the institute.

♦

Moses Shapiro, New York attorney, has been appointed by the New York chapter of the Institute of Scrap Iron and Steel Inc. and the Waste Material Workers union as impartial chairman for labor relations of the scrap iron and steel industry in greater New York.

♦

William B. Coleman, consulting chemist and metallurgist, has been appointed to the membership committee, Franklin institute, Philadelphia. He is secretary-treasurer, Metropolitan Philadelphia chapter, American Foundrymen's association, and a past president, American Society for Metals.

♦

Glenn L. Martin, president, Glenn L. Martin Co., Baltimore, has been appointed by Governor-elect Herbert R. O'Conor of Maryland to a nonpartisan, citizens' committee of nine members which is to make a survey of state departments and institutions, and recommend steps for reorganization and efficient operation.

♦

C. C. Abbott, Dayton, O., who represents the Newport Rolling Mill Co., Newport, Ky., and affiliated companies, the Andrews Steel Co. and the Globe Iron Roofing & Corrugating Co., has also been appointed representative in that area for the Washington Tin Plate Co., Washington, Pa., and for the bar division of Joslyn Mfg. & Supply Co., Chicago.

♦

Walker W. Stevenson, Erick Larson and Alva O. Greist, well known in the public utility, coal, metallurgical and related industries, have organized the consulting engineering firm of Stevenson, Greist and Larson, with headquarters at 270 Broadway, New York, for plant design and operation, appraisals and tax studies.

♦

Mell E. Trammell, Republic Steel Corp., Alabama City, Ala., has been elected general chairman, executive committee, metals section, National Safety council, Chicago. H. J. Griffith, Jones & Laughlin Steel Corp., Pittsburgh, has been made vice

Frank A. Frey

Who has been elected president and treasurer, Geuder, Paeschke & Frey Co., Milwaukee, manufacturer of sheet metal stampings and steel containers, as noted in STEEL, Nov. 21, page 22

chairman, and Irvin A. Brinkman, Mackintosh-Hemphill Co., Pittsburgh, secretary and news letter editor.

Committee chairmen are: *Contest,* H. J. Spoerer, Youngstown Sheet & Tube Co., East Chicago, Ind.; *engineering,* R. H. Ferguson, Republic Steel Corp., Cleveland; *fire prevention,* W. T. Filmer, Youngstown Sheet & Tube Co., Youngstown, O.; *foundry,* J. A. Coltrin, National Radiator Corp.; *health,* Dr. A. G. Kammer, Inland Steel Co., Indiana Harbor, Ind.; *membership,* H. H. Henry, Otis Steel Co., Cleveland; *poster,* Fred E. Warr, Carnegie-Illinois Steel Corp., Pittsburgh; *program,* John P. O'Rourk, Bethlehem Steel Co., Sparrows Point, Md.; *publicity,* Earl Fyler, Carnegie-Illinois Steel Corp., Chicago; *railway carbuilders,* P. J. Brand, Pullman-Standard Car Mfg. Co., Chicago; *statistics,* N. B. MacHose, Bethlehem Steel Co., Lackawanna, N. Y.

♦

Francis Hodgkinson professor at Columbia university, and consulting engineer, New York, will be presented with the Holley medal at the fifty-ninth annual meeting of the American Society of Mechanical Engineers in New York, Dec. 6, for "meritorious services in the development of the steam turbine."

Other awards to be given that same night by the society are: Worcester Reed Warner medal to Lawford H. Fry, railway engineer, Edgewater Steel Co., Pittsburgh, for "written contributions relating to improved locomotive design and utilization of better materials in railway equipment"; Melville medal to Alphonse I. Lipetz, chief consulting engineer in charge of research, American Locomotive Co., Schenectady, N. Y., for his paper on "The Air Resistance of Railroad Equipment"; Pi Tau Sigma medal to Wilfrid E. Johnson, engineer, General Electric Co., Fort Wayne, Ind., for outstanding achievement in mechanical engineering for 1938.

DIED:

■ JOHN A. BRYANT, 58, vice president, Ferro Stamping & Mfg. Co., Detroit, Nov. 15 in that city. He was a member, American Society of Civil Engineers.

♦

Alfred Johnson, 76, superintendent, Washburn Wire Co., New York, Nov. 18.

♦

Gustave R. Loesch, 68, founder and president, Lake Erie Foundry Co., Buffalo, Nov. 15.

♦

Frank D. Carrico, 65, a special machine designer for the National Broach Co., in Detroit, recently.

♦

Samuel G. Rea, vice president, Standard Railway Equipment Co., New York, in that city, Nov. 16.

♦

Carl Ernest Pioch, 45, automotive engineer and a former sales engineer for Frederick Colman & Sons, tool works, recently in Detroit.

♦

Charles S. Dundore, 70, president, Dundore Mfg. Co., Reading, Pa., recently from injuries sustained in an automobile accident.

♦

Adolph G. Droegkamp, 63, secretary, Droegkamp Furnace Co., Milwaukee, maker of furnaces and air conditioning equipment, Nov. 9.

♦

David G. McIntyre, 76, president and a founder of Skagit Steel & Iron Works, Sedro Woolley, Wash., Nov. 10 at his home in that city.

♦

Ira I. Paddock, 68, district sales manager at Fort Worth, Tex., Colorado Fuel & Iron Corp., Denver, for more than 35 years, in Fort Worth, Nov. 11.

♦

E. S. Roach, at his home in Erie, Pa., Nov. 10. Mr. Roach was president, treasurer and a director, Penn Brass & Copper Co., Erie, and also treasurer, Bury Compressor Co., Erie.

♦

Joseph A. Boyden, 62, secretary, Van Dorn Iron Works, Cleveland, and a former vice president of the firm, in Cleveland, Nov. 15. Mr. Boyden was first employed by the company in 1917, and was vice president several years until 1937.

Mobility and New Ideas Often Give "Little Fellow" Competitive Advantage

By BARTON W. MURRAY

■ AFTER code committees representing a few hundred industries had taken turns in sprinkling cigar ashes on the floor of my office in Washington during the early days of NRA, it seemed to me one of the most serious problems in American industry was reflected in the repeated statements of many small manufacturers that eventually they would be forced out of business by their big competitors.

New regulations were urged as curbs on the heavyweights before they could land so many hard punches the small fellows would be compelled to toss in the sponge.

Well, those proposed regulations are not in effect; competition seems to be tougher than ever, and yet I notice very few sponges on the floor of the ring. Right now I believe the big fellows never will lick the little ones, because the rules that really count in this David and Goliath struggle are natural rules, fundamentally more effective than any prescribed codes of fair competition or trade practice guides ever can be.

Should Encourage Fair Practices

I do not mean to say, of course, that fair practices in business should not be encouraged. Like most any other person in industry, I'm for everything in the Lord Fauntleroy line that might tend to make life sweeter. But whether there are reasonably fair competitive conditions or not, I believe that a scrap between the small manufacturer and the large is not going to wind up with the small man on the floor. There are many reasons for this opinion, but I am frank to say I would not put myself way out on a limb by expressing it publicly if I had not talked intimately with many business executives about their toughest competitive problems.

Perhaps it should be said that in the early days of the Roosevelt administration, before all those harsh words were slung back and forth, I was division administrator of NRA, responsible for the supervision of the codes for more than 400 manufacturing industries which turn out almost everything from battleships to pins. The capital investment in these industries exceeds twenty billions of dollars, and more than five million employes were governed by the codes in my division.

If you want to get an earful about rugged competition, try to referee the battles in a few hundred assorted industries. You surely would hear plenty about the headaches incidental to every type of business organization. And you would, I think, join me in the opinion that the size of the company is no indication of how long, or how well, it can stand toe to toe with its rivals.

Delegation of Authority

Let's consider a few things that determine effectiveness in competition. Take the question of executive direction, for instance. The head of a great corporation must delegate so much authority that most of the actual business of the company is done by lesser men. These subordinates also supply many of the opinions and facts on which the principal executive must rely when making important decisions.

The boss of a relatively small outfit is matching his brains then with the lesser men of the big companies in many phases of business, without the handicap of wondering what the man on the next rung of the ladder will think if things go slightly haywire.

The daily routine of the average small manufacturer brings him in on all important deals, from beginning to end, and when final decisions are necessary he makes them on the basis of first-hand information. Small companies have an asset in the day-to-day direction of the business by the top man, which is not entirely offset by the genius of the big corporation executive.

The LEVIATHAN was not junked merely because it was old. There are plenty of ships now sailing the seas and earning a profit for operators who worried about competition when the big ship made her maiden voyage. But the LEVIATHAN, under modern competitive conditions proved too big, with too much overhead. Many large corporations I know are industrial Leviathans. Is it enough to say only that?

It is true, of course, that big companies have an advantage when buying materials because of increased buying power, but that huge buying power sometimes does not balance the heavy overhead when business slows down.

Many small operators can squeeze through a dull period that eats up the funds of top-heavy companies. In times of slack demand economies are possible in small companies that would wreck a big one. And when business picks up after a let-down the small outfit can get away to a flying start while the giant is getting untangled. It costs a lot for a big organization to slow down or get going to meet fluctuations in demand, so the benefits of mass production cannot always be achieved.

When it comes to research, the huge organizations have an edge because they can afford the expense of experimental work, but not all new ideas originate in laboratories —not by a long shot. The practical manufacturer on top of the ball in a small plant can get ideas, too, and he can put them into effect without consulting a third vice president.

Mass production plants ordinarily are not geared to make new products until the demand has been clearly established. Meanwhile, the small manufacturer has the market at a price that should yield a profit, and while he is rolling around on the floor with buyers trying to keep that profit, he is more likely to learn what the customers want in the way of new stuff than the sheltered head of a big company possibly could glean from a detached study prepared by a research department. Human nature keeps demand for new products constant.

Trends Point to Demand

Now, I agree that it is not the softest job to think up ideas, but an intelligent start can be made by careful observation of the trend of the demand for things that might be produced in a given plant. For many years the trend certainly has been away from transportation by slow-moving vehicles, away from large homes for the average family, away from heavy articles for everyday use, to cite a few examples.

Somewhere within the framework of every such broad trend there exist many minor twists that call for new goods or new developments of articles already in use. I think the alert small manufacturer is well equipped to lead in providing new things. If the demand grows sufficiently to warrant mass production, and big factors enter the field so aggressively that the price level sinks, I say to the little fellow that he should step elsewhere and let the big boys slug it out on price or services.

Making new stuff for a changing world will keep the little fellow in the game, and if he rings the bell good and hard, he will soon be one of the big ones.

The author was division administrator of NRA, supervising codes for more than 400 manufacturing industries. His views, gained from many contacts in that capacity, are interesting, but publication does not necessarily imply agreement.—The Editors.

Steel Goes to Farm in Prefabricated Buildings; Group Takes 12½ Tons

■ TENNESSEE Coal, Iron & Railroad Co. last week shipped the first of 12 units of prefabricated farm buildings to sites selected by the farm security administration in Alabama, Georgia and South Carolina.

Each unit includes five buildings —dwelling, barn, chicken house, outdoor pantry, and sanitary outhouse. After months of research, designing and experimental work by the steel company and FSA engineers, a satisfactory type of steel farm building construction was perfected. The FSA immediately asked for bids and the Tennessee company was awarded the contract to supply 12 units.

The dwelling contains five rooms, living room, three bedrooms, and combination kitchen and dining room. Two large closets and a pantry are included and space is available for a bathroom if desired.

Approximately six tons of steel is used in the house. All the foundation structure, the frame, sides, roof, exterior door, and window trims and fireplace are steel. Floors and doors are of wood. An insulating wall board is used as interior finish for walls and ceilings. This also serves as insulation.

Approximately 12½ tons of steel is required for the five buildings. Outbuildings are all steel.

Complete prefabrication enables swift erection by bolting together the pre-formed panels. Such work may be performed by the farmer, or purchaser, with a few helpers.

Even foundations are prefabricated. The piers are formed from two hot-rolled steel channels, shop-welded to a steel footing plate, and coated with asphalt by a hot-dipping process.

Inside partitions of the dwelling are insulating wall board surfaces supported on steel frames. Steel joists support the wood floor.

A steel fireplace with jacket enclosure and circulating air features provides a central heating system, is economical, furnishes a constant flow of warm air throughout the house.

The barn contains a corn crib, two compartments for animals, a compartment for implement storage and a hay loft. It is 20 feet wide and 32 feet deep. The poultry house is 10 x 12 feet and the outdoor pantry, 8 x 12.

Both dwelling and outbuildings will be available in several attractive designs and dimensions. The type of construction readily lends itself to expansion.

The buildings are weather tight through the use of overlapping crimps, or grooves, in the metal sheets.

Dwelling walls have a lower conductivity value than a 13-inch brick wall, meaning it requires longer for heat or cold to penetrate to the interior of the steel dwelling than to an enclosure within brick walls 13 inches thick. This is achieved by the insulating wall board and by a novel method of ventilating the attic and the area between the outer and inner walls.

As long-term financing may be required in some cases, ranging up to 40 years, steel appears to have an advantage over other materials, due to its durability and low maintenance cost.

(For illustration of dwelling see STEEL, Feb. 21, p. 22.)

"Raw Material" for Huge Gear

■ **Not just a big wheel, but raw material received by Lewis Foundry & Machine division of Blaw-Knox Co., from its sister division, Union Steel Castings, for a gear to be part of a continuous mill drive. The casting weighs 35,300 pounds, 15 feet in diameter, face width 25 inches, vanadium alloy composition**

McKee Booklet Covers Iron, Steel Industry

■ Arthur G. McKee & Co., engineers and contractors, Cleveland, have published a booklet on the magnitude and character of the iron and steel industry in the United States, compiled by its research and statistical staff.

It was prepared originally for distribution to members of the British Iron and Steel institute and Institute of Metals of Great Britain on the occasion of their proposed visit to the United States in October. When the trip was canceled the publication was in an advanced stage and was carried through. Copies have been sent members of the two British societies as well as iron and steel executives in this country.

It covers raw materials, with maps showing distribution of reserves, pig iron and ingot producing capacities, their geographic distribution, and information on finished steel products. Numerous illustrations show representative plants, and tables present salient statistical matter.

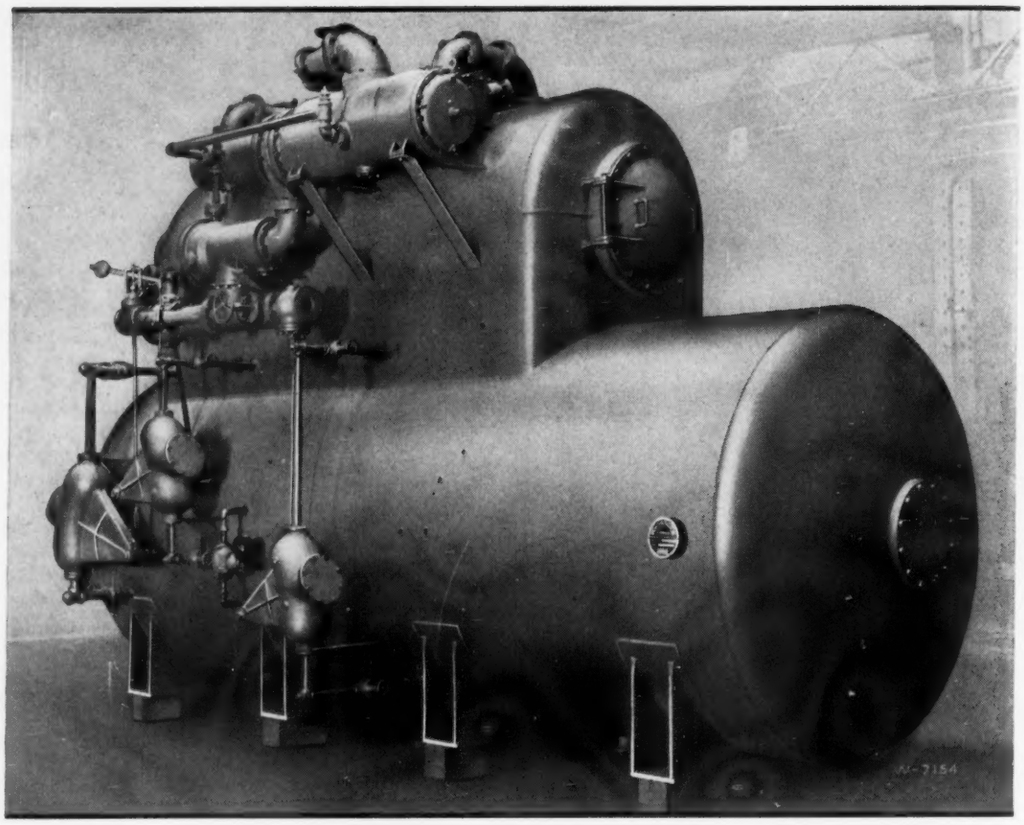
Koppers Merges Divisions

■ Koppers Co., Pittsburgh, has merged its Western Gas division, Ft. Wayne, Ind., with its Bartlett Hayward division, Baltimore. Sales and engineering activities will be moved from Ft. Wayne to Baltimore, Dec. 1.

This is a step in simplification of corporate structure started two years ago. Walter F. Perkins, vice president of Koppers Co., will be in direct charge of manufacture, engineering and sales of all products of the combined divisions.

SAVE FUEL

by increasing boiler feedwater temperature



Worthington Storage Type Deaerating Feedwater Heater with copper-bearing steel shell . . . capacity 400,000 lb. per hour . . . storage capacity 7,500 gallons. This heater is being installed by a prominent manufacturer.

WORTHINGTON DEAERATING FEEDWATER HEATERS will produce the maximum obtainable feedwater temperature from the heating steam.

AIR CONDITIONING EQUIPMENT

REFRIGERATION AND ICE PLANT EQUIPMENT

AIR AND GAS COMPRESSORS

STEAM TURBINES

DIESEL ENGINES

GAS ENGINES

CENTRIFUGAL HIGH-PRESSURE BOILER FEED PUMPS

DIRECT-ACTING STEAM, POWER, AND ROTARY PUMPS

DEEP WEEL, SUMP, AND DRAINAGE PUMPS

STEAM CONDENSERS AND AUXILIARIES

STEAM-JET EJECTORS

PORTABLE COMPRESSORS AND AIR TOOLS

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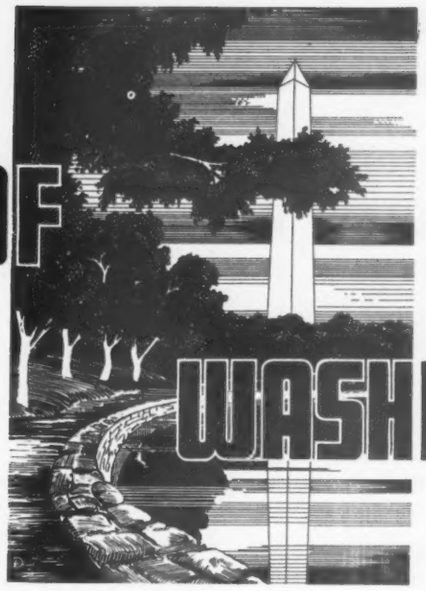

WASHINGTON

■ AFTER months of preliminary work, the national economic committee will begin its monopoly investigation Dec. 1. How long these hearings will continue is a matter of conjecture, but they will adjourn over the Christmas holidays.

As indicated in these columns several weeks ago, three government experts will first give testimony to lay the ground work for the future hearings. They will be Dr. Willard Thorp, representing the department of commerce, Dr. Isador Lubin, chief of the bureau of labor statistics, and Leon Henderson, secretary of the economic committee.

Unless there is some change in the plan, following their testimony the hearings will focus on the use, distribution and pooling of patents in the automotive industry. The same line will then be followed in relation to the glass industry.

"In connection with the nature of the hearings," said Senator O'Mahoney, chairman of the committee, last week, "it is worth-while to call attention to the fact that in Section 3 (b) of the resolution by which the committee was created, the departments of justice, labor, treasury, and commerce, and the federal trade commission and the securities and exchange commission, are directed to appear before the committee and present evidence by examination of witnesses and the introduction of documents and reports.

"The hearings for which arrangements were made today are being conducted under that section of the resolution. It is to be remembered that the committee itself has the authority to hold any other hearings that it may desire to hold, but nothing has been done with respect to that phase of its powers.

"The thought of the committee in arranging for this introductory statement is that it would be helpful to have this outline drawn of industry and commerce with special emphasis on employment and unemployment and payrolls.

"It will be a factual delineation of changes in the industrial status of the country, of production and distribution, and the effect of these various factors not only upon employment and unemployment, but also upon the national income.

"Following this introductory statement the department of justice, which has been working with the department of commerce and the federal trade commission in the study of patents, will begin the presentation of that part of the study. The first segment of this presentation will have to do with the use, distribution and the pooling of patents in the automobile industry. After that has been completed, the same agencies will put on a similar hearing with respect to patents in the glass industry.

"This committee is going to try to do a constructive job. I know it is going to be very important."

BY L. M. LAMM
Washington Editor, STEEL

ONLY ONE BUSINESS MAN CHOSEN FOR LIMA MEETING

Apparently reflecting the attitude of the present administration toward business, only one person left this country the latter part of last week to attend the eighth Pan-American conference at Lima, Peru, opening on Dec. 9, who could in any way be said to represent business. He was appointed only after strenuous efforts had been put forth by officials of the department of commerce.

Secretary of State Hull and a large delegation sailed from New York last week, including as delegates two representatives of labor, one from the CIO and the other from the AFL. It was only after the most strenuous kind of effort had been made that E. P. Thomas, formerly attached to a subsidiary of the United States Steel Corp. was appointed to go with the delegation, not as a delegate as were the representatives of labor, but as an advisor. Mr. Thomas at present is connected with the foreign trade council. This is said to be the first time that delegates from the United States have not included representatives of business.

Dr. Alexander V. Dye, director of the bureau of foreign and domestic commerce, went to Lima as an advisor to Secretary Hull and two commercial attaches of the bureau will be at Lima as personal advisors to Dr. Dye. They are Merwin Bohan who is located at San Diego, Chile, and Julian Greenup, who is located at Lima.

Twenty-two Western Hemisphere governments will be represented at the Lima conference. The meetings are in the nature of economic and cultural conferences and are meant to solidify Mr. Roosevelt's good-neighbor policy.

Business had been deliberately overlooked by the state department in naming delegates, despite the fact the labor unions are represented. It was not until the eleventh hour that Mr. Thomas was selected. This is an interesting incident in view of the fact that the United States is trying to extend its foreign trade with the Western Hemisphere.

THREE BATTLESHIPS TO COST $225,000,000

The navy department has announced award of three new 35,000-ton battleships at a cost of approximately $150,000,000. When the armament and ammunition outlays for these ships are made it is an-

ticipated the total cost will be $225,000,000.

One of the battleships will be built by the Newport News Shipbuilding & Dry Dock Co., at $49,540,000, not including the main propelling machinery which the government furnishes, and to this amount $26,000,000 must be added as the expected cost of armament, guns and ammunition which the navy supplies.

Another award went to the Bethlehem Shipbuilding Corp., Quincy, Mass., at $49,815,000 to which there must also be added $26,000,000. The third ship was awarded to the Norfolk navy yard.

Award for a fourth ship has been delayed pending further study of the bid received. Opening of bids on these vessels was postponed three times because the shipbuilding companies found it almost impossible to estimate costs, because it has been so long since a new battleship was built in the United States.

43 SHIPS ORDERED BY MARITIME COMMISSION

The United States maritime commission has accepted the low bid of $2,443,000 each, submitted Oct. 18 by Federal Shipbuilding & Dry Dock Co., Kearny, N. J., for the construction of six C-3 cargo ships.

This award brings the total of new ships ordered this year by the commission, either for its own account or in co-operation with private operators, to 43, or within seven vessels of its minimum annual quota under a program designed to effect a systematic and orderly replacement of obsolete merchant tonnage.

TEST WELDING ON NEW DESIGN OF CENTER SILL

In the building of railroad rolling stock it is axiomatic that changes in design to simplify fabrication must never be allowed to interfere with strength and safety in service.

To make certain that a contemplated change in the proportions of a stainless steel center sill for high-speed railroad passenger cars would not impair the strength, tests recently were conducted at the national bureau of standards on two specimens of center sills fabricated by the Edward G. Budd Mfg. Co., Philadelphia.

The center sill of a car is its backbone, running from one set of draft gear to the other, taking all the buffing and pulling stresses, besides serving as the principal member to which the trucks and superstructure are attached.

In the development of modern high-speed, light-weight equipment, in which field the Budd company has played a leading part, an unusual design of center sill was developed.

The sill is fabricated from four pieces of corrosion-resistant stainless steel joined by shot welding. In this type of construction every joint in the long box-like structure must be accessible to the electrodes of the welding machine. This condition is obtained by making both sides of every joint within reach from the outside. However, one of the two specimens submitted allowed only a comparatively small space in which to carry out certain of the welding operations. By changing the proportions in the second specimen, greater space was allowed, but the question arose as to how this would affect the strength.

Under test in the bureau's 10,000,000-pound machine, said to have the highest capacity of any testing machine in the world, it was found that the section which was easier to fabricate was actually stronger than the other section. At a load of 1,175,000 pounds slight buckling of the flanges was observed. The maximum load attained was 1,456,000 pounds. Needless to say, this is far greater than any stress to which the center sill would be subjected in normal service.

POINTS OUT MERITS IN INDUSTRIAL INSTRUMENTS

The widespread introduction of measurement devices and automatic control instruments in industry has speeded up production, improved the quality of products, reduced costs and increased the productivity of labor. This is shown by a report entitled "Industrial Instruments and Changing Technology," prepared by the national research project of the PWA.

Although industrial instruments have in some instances served to displace labor, Corrington Gill, assistant administrator in charge of the research, pointed out in his letter of transmittal that they also have played an important role in the development of new services.

Instruments make for precision control of processes and for efficiency in the use of raw materials, machinery and equipment, the report states. Many modern manufacturing plants employ several hundred instruments in their production processes and some of the larger concerns use thousands.

Such industries as petroleum refining and automobile manufacturing, for example, rely heavily on instruments. In the heat-treating of steel, it is pointed out, skilled craftsmen used to judge the temperature of the steel by its color. The introduction of the pyrometer eliminated the need for this skill, but the operation still required manipulation to regulate the temperature.

Development of a temperature controlling apparatus made the heat-treating process almost entirely automatic, the report states. Instruments incorporating automatic control features are gradually superseding simple indicating and recording types. Instruments permit economies by the reduction of waste through maintenance of uniform operating conditions and by the use of cheaper raw materials. Inferior materials can be made into products equal in quality to those based on more expensive raw materials.

"Instruments in some instances serve as direct substitutes for labor," the report continues. "Relays, switches and other mechanisms which transfer the actions of an instrument into automatic operations of a machine have eliminated manual workers."

The report also points out that the installation of industrial instruments sometimes results in changes in the specifications for available jobs.

"Where a new skill is introduced it is likely to be of a different sort, for instance, one requiring an ability to read meters and perform calculations."

PWA FUNDS ALLOTTED; TO SPEED UP PROJECTS

Allotment of the $924,000,000 voted for the PWA in the current spending-lending recovery drive has been completed, Administrator Ickes has announced. Of the total, $200,000,000 was given for federal projects.

"With allocations completed," he said, "efforts will now be concentrated on getting all projects under construction by the Jan. 1 deadline. No efforts will be spared to aid applicants in getting their jobs started, but the deadline will be rigidly enforced."

He said construction already has begun on 1059 federal projects and on 48 per cent of the 6333 nonfederal projects.

The total cost of nonfederal works for which allotments were made was placed at $1,477,995,426.

FEDERAL IRON, STEEL AWARDS

During the week ending Nov. 19, the government purchased $776,878.45 worth of iron, steel and their products. These purchases were made under the Walsh-Healey act, and the items included: James B. Clow & Sons, Chicago, $10,145.71; Truscon Steel Co., Chattanooga, Tenn., $13,278.84; Elliott Co., Jeannette, Pa., $84,496.40; Edge Moor Iron Works Inc., Edge Moor, Del., $144,170; Bethlehem Steel Co., Los Angeles, $30,519.50; C. Frederick Wolfe Inc., Brooklyn, N. Y., $14,100; Dravo Corp., Neville Island branch, Pittsburgh, $28,515; Consolidated Steel Warehouse Co., Philadelphia, $16,483; Westinghouse Electric & Mfg. Co., New York, $111,000; National Tube Co., Pittsburgh, $324,170.

No Longer "Toys", Motor Scooters Now Take 1000 Tons of Metals Annually

■ AS A MARKET for steel sheets and tubing, cast and malleable iron, aluminum and die cast zinc, manufacture of motor scooters has shown surprising growth in the past two years, now taking more than 1000 tons of metals annually.

Before 1936 numerous attempts were made to produce light motor vehicles, such as motorized bicycles and "buckboards," but none of these had enduring success. Early 1936 saw the introduction of the motor scooter that today is proving commercially profitable for delivery and messenger services, light hauling work, and in recreational fields.

At first the motor scooter was considered merely a fad. An early use was in amusement parks at 5 cents a ride. Later bicycle shops rented them for 75 cents to a dollar an hour.

Today these vehicles, because of low purchase price and operating expense, are more in demand for commercial than amusement purposes. Their use is spreading to large industrial plants for interdepartmental transportation, delivery, mail, payroll or light hauling.

Average motor scooter, weighing about 115 pounds, hauls a weight of 300 pounds. Manufacturers claim an economy of 120 miles to a gallon of gasoline, point to easy maneuverability and garaging.

In 1936 about 100 units were produced monthly. Now close to 1700 are coming off assembly lines, and it is estimated production this year will total 20,000.

Moto-Scoot Mfg. Co., Chicago, makes about 50 per cent of them. This company began in May, 1936, with four men, an acetylene torch and a few fender tools, occupying half of the second floor of a factory building. In June, 1936, 65 units were produced.

Today the company occupies the entire three-story building in which it made its start, has 75 employes, makes 850 scooters monthly.

Developing New Models

Moto-Scoots are produced in six models, ranging from a small scooter model to a deluxe three-wheeled model with sidecar. Several models have built-in package compartments, while extras include windshields, golf bag attachments and tow bars.

New models being developed include one more closely approaching the automobile in appearance. This will be a three-wheeled vehicle, with two in front and one, the power wheel, in rear. Engine will be enclosed by the rear deck, while the streamlined vehicle will have a long hood, unique spring suspension and steering wheel. Sport version of this model will resemble a midget racing automobile while the commercial car will have a large package compartment built into the hood, placing the driver higher and farther to the rear.

For use at world fairs and similar events a sightseeing model is being developed, to be coupled to a covered trailer, seating ten persons.

■ **Demonstrating motor scooters on the roof of Chicago's Merchandise Mart. These scooters, made by Moto-Scoot Mfg. Co., Chicago, weigh 115 pounds. Originally built for amusement, they now are finding wide commercial use**

See Government Move To Rule Industrial Prices

■ THAT work of the national economic committee, sometimes called the O'Mahoney anti-monopoly committee, probably is a prelude to attempted federal control of industrial pricing policies is a conclusion reached by Allen W. Rucker and N. W. Pickering, business economists. Farrel-Birmingham Co. Inc., Ansonia, Conn., has issued a booklet, No. 29 of a series, on "The Coming Change in Federal Price Policy," embodying this study. The authors say:

"The price-raising fantasy has been overtaken by economic realities and must be abandoned. In turn, the second theory of price-balancing, which calls for lowering of industrial prices to the level of farm prices, is evidently to be given a trial. . . Having failed to bring and hold farm prices up to the level of industrial prices it is only natural that the administration should contend that depression is caused by high and rigid industrial prices, and that business management cannot longer be permitted to exercise its rights of pricing its own goods, but that pricing must be brought under government regulation."

Recommendations for government action to correct tendency toward price rigidity include: Relieve management of burden of rigid wage rates and restricted working hours; amend legislation of Wagner act type, removing opportunity of extremists to create labor strife to avoid readjustments in wages and price; remove threat of inflation by balancing the federal budget; encourage investment of private capital by removing hazards to profits from punitive legislation and government competition with private business.

Issues Steel Text Book

J. Joseph W. Palmer, assistant chief of the metals and minerals division of the department of commerce, has issued a pamphlet entitled "Making Iron and Steel." It covers the history of iron, what iron and steel are, and other fundamentals about the industry. It has been prepared for schools and colleges.

SHAW-BOX CRANE & HOIST DIVISION, Manning, Maxwell & Moore, Inc., are the builders of these 25 ton 93' 6" span steel mill cranes. Like the large majority of tables, cars, motors and other cranes in leading mills, it is Hyatt Roller Bearings equipped.

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HYATT ROLLER BEARINGS

MIRRORS OF MOTORDOM

DETROIT

■ STYLE and design of modern motor cars are much-argued points, despite the similarity which runs throughout the entire list of 1939 models. Opinions vary probably as much as individual tastes vary, and what is "hot" today in a few short months may be as outmoded as last week's turkey.

Candid criticisms of motor car design are rare, since critics usually must watch where they are stepping, lest they tramp on the toes of the industry which is their bread and butter. Hence it was refreshing to hear the unflavored opinions of Henry Dreyfuss, noted industrial designer, who told members of the Society of Automotive Engineers here recently what he thought about the new models.

"This year," he said, "some of the designers have gone too far. Some radiators look as if they had pinched their noses between forefinger and thumb preparatory to taking a good blow and then, gasping, opened their mouths to show a good set of chromium louvers.

"The idea of covering the running boards of cars is fine and makes for sleekness and unity of form, but the sacrifice that has been made to do it must be deplored. On one of the best appearing cars, an otherwise finely proportioned door has been given a clubfoot to disguise the running board.

"It is pitiful that designers are required to rely on extraneous, applied decoration to give eye appeal to cars. Some of the damnedest ornaments have appeared on cars—all in an effort to be different from the other fellow."

Mr. Dreyfuss significantly pointed out that designers in the automotive industry must be guided to a major extent by what the competition is doing and what the public wants or is believed to want. But, he added, "what a swell time some engineers could have if, forgetting what the fellow next door is doing, they could design a car that would say power and strength and safety and speed, and in the natural evolution of that expression, would automatically say beauty!"

While he did not pull any punches in his critical appraisal of designs, Dreyfuss made it plain that he considered the New York show the best he had ever attended, that the industry has well taken care of comfort and safety in new models, that there are enough gadgets available to satisfy the most fastidious driver, and that a magnificent array of colors has been developed for car finishes.

Now, let's see what the automobile designer thinks on the subject.

"Style is the watchword of today's motorists," says George W. Walker, who developed the design of the 1939 Nash line of cars. He adds: "We sought, in designing the car, to establish a feeling of swift transition, and we strove to keep the exterior lines clean and unembellished, in keeping with the best principles of aerodynamics. These principles result not only in grace and beauty, but also serve the functional purpose of producing a far quieter highway ride."

Headlights, an integral part of front fenders, concealed door hinges, tail-lights sunk smoothly into rear fenders are a few of the details making up aerodynamic streamlining.

BY A. H. ALLEN
Detroit Editor, STEEL

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■ **Improved optical system for headlamp adjustment, carried on an overhead monorail conveyor, has been installed at the Plymouth plant for checking the accuracy of headlamp beams on cars coming off the assembly line. Lamp housings are now a rigid part of fender units, with reflectors carried in cradles which are adjusted by two screws in the top of the lamps just beneath the ornamental bezel**

All of them appear widely on 1939 models.

What of the car of the future? The next step appears to be the further smoothing out of front ends, removal of the center radiator grille to make the nose smooth, unbroken sheet steel, and concentrating all front end ventilation in catwalk grilles or in the low teeth-like louvers now used by some models. With this also may come a blending of fenders, both front and rear, into the body lines, making them integral parts of body stampings. Some 1940 cars undoubtedly will embody this type of construction, which will necessitate complete elimination of running boards, and will bring about further widening of the body itself. Blending of fenders into bodies will mean a substantial saving in body steel, it is believed.

Capital which Fisher Body has been able to make of the greater glass area and improved vision in its 1939 bodies likely will be followed by other makers, as observers at the shows already have noted this development a strong selling point.

■ CHEER stories returning from the automobile shows are numerous. Packard showed one of its 12-cylinder models in New York, with a price tag of $5300 on it. Early in the week a gentleman walked up to one of the salesmen in the exhibit, peeled $5300 in new bills from his roll and said he "would take that one." A specially fitted Packard Super 8, finished in ruby maroon with dirigold trim and hardware, on display at the Los Angeles auto show, was snapped up quickly by Johnny Weismuller.

Dirigold, incidentally, is a nonferrous casting alloy with 9-10 per cent aluminum, 1.10-2 per cent nickel, 0-1.7 per cent tin and the balance copper. In the finished state it is difficult to distinguish from gold and has been used to fit up a number of special cars, including a Chrysler acquired some time ago by Major Bowes.

Packard sales reports for the first ten days of November show more cars delivered than in the first ten-day period of any month this year, exceeding the first ten days of October by 33 per cent.

■ SOME important realignments in body suppliers are bound to develop when the huge new Ford press plant swings into operation shortly after the turn of the year. In fact, these realignments are already in process, and they point the way to some major changes in automobile companies themselves, if the dopesters can be believed.

It is likely Briggs will evacuate the Ford Highland Park plant eventually and Nash is reported already looking into the possibility of taking an option on this property, which is centrally located and ideally suited to automobile assembly work. Nash has been consolidating its operations in Wisconsin and all signs indicate that some time in the future the company will be moving to Detroit. The Wisconsin governor-elect, Julius P. Heil, is said to be making a determined effort to persuade Nash to remain in Wisconsin, as well he might in view of the estimated $6,000,000 annual tax bill of the company. But far-sighted observers maintain it is a lost cause and eventually Nash will be entirely housed in Detroit, along with the Kelvinator refrigerator headquarters.

Looking still further ahead, some forecasters see in the Nash-Kelvinator enterprise a future unit in the integration of Chrysler Corp., to cover the household equipment field. General Motors is well represented with affiliated companies in the domestic appliance field, and it is reasoned Chrysler will be making a logical step in moving in as a competitor. Already Chrysler has its Airtemp division to handle the air conditioning field. Kelvinator would serve the domestic refrigeration market, while the commercial refrigeration field would be served by Universal Cooler Corp., which many now believe to have a working agreement with Kelvinator. Only recently a number of engineers left the Kelvinator company to go with Universal Cooler.

This still leaves a gap in the washing machine and vacuum sweeper field, but a likely prospect to fill this niche is the Apex Electrical Mfg. Co. of Cleveland, and its affiliated enterprises.

It must be remembered these proposed consolidations are all in an uncertain stage and there is nothing official about them. But, fitting them together makes an interesting picture for Chrysler in the domestic equipment field and would nicely round out the activities of this aggressive motor manufacturer. The connection between Chrysler and Nash-Kelvinator may appear remote at present, but George Mason, president of NSK, is a former Chrysler executive, is close to the executive thinking of Chrysler, and has made a success in his new post.

Incidentally, Chrysler's net profit for nine months ended Sept. 30 was equivalent to $1.53 a share, compared with $9.29 in the same period of 1937. Sales for the three quarters were just a shade over half of the $572,217,107 reported in these months last year, but a rousing last quarter should appreciably better this showing. Earned surplus at the end of September was over 86 millions, a gain of about $3,400,000 in nine months.

■ TEN years of diesel engine experiments have culminated in announcement of the new Dodge-built diesel for 3-ton trucks. It is 6-cylinder, 4-cycle type, 331 cubic inch displacement, 14.5 to 1 compression ratio, supplying 95 horsepower at 2600 revolutions per minute. The new power unit has full-length water jackets, valve seat inserts, chain driven camshaft, tin plated steel strut aluminum pistons with tin plated rings. Copper-lead bearings are used in conjunction with induction-hardened crankshaft journals.

Limitations imposed by the combustion chamber have required the use of overhead valves in the engine. The combustion chamber is of double-O shape with an auxiliary double chamber energy cell. With this design the fuel is injected across the minor axis of the chamber, a considerable portion entering the energy cell through a venturi-shaped passage. Combustion begins in the main chamber, but most of the fuel is ignited in the energy cell, thus keeping peak pressures from piston and bearings and producing a high degree of turbulence. Automatic control of injection timing in accordance with engine speed, and speed-governed regulation of maximum fuel quantity are claimed to provide flexibility and freedom from objectionable exhaust smoke.

Automobile Production

Passenger Cars and Trucks—United States and Canada

By Department of Commerce

	1936	1937	1938
Jan.	377,244	399,186	227,130
Feb.	300,810	383,900	202,589
March	438,943	519,022	238,598
April	527,625	553,231	238,133
May	480,518	540,377	210,183
June	469,368	521,153	189,399
July	451,206	456,909	150,444
Aug.	275,934	405,072	96,936
Sept.	139,820	175,630	89,623
Oct.	230,049	337,979	*250,000
10 mos.	3,691,517	4,292,459	1,893,035
Nov.	405,799	376,629	.....
Dec.	518,958	347,349	.....
Year	4,616,274	5,016,437	.....

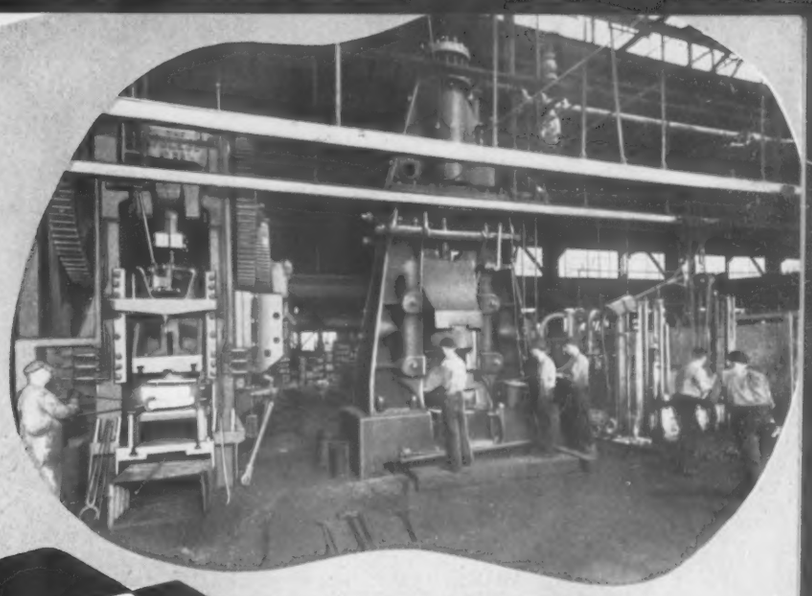
*Estimated.

Estimated by *Ward's Reports.*

Week ended:	1938	1937†
Oct. 22	68,360	91,905
Oct. 29	73,335	90,155
Nov. 5	80,030	89,770
Nov. 12	86,300	85,325
Nov. 19	96,735	85,757

†Comparable week.

(Production figures for the week ended Nov. 26 will be found on page 19.)



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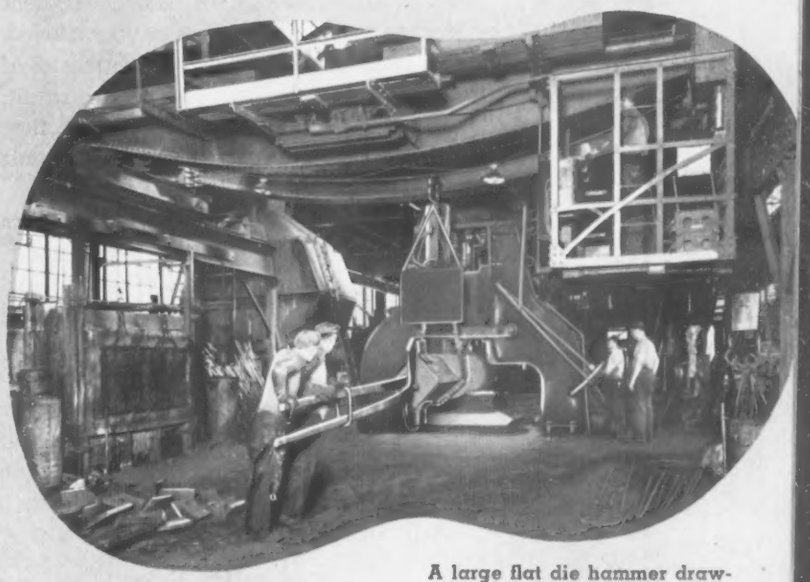

A large flat die hammer drawing out a 17" round shaft from a 20" square billet.

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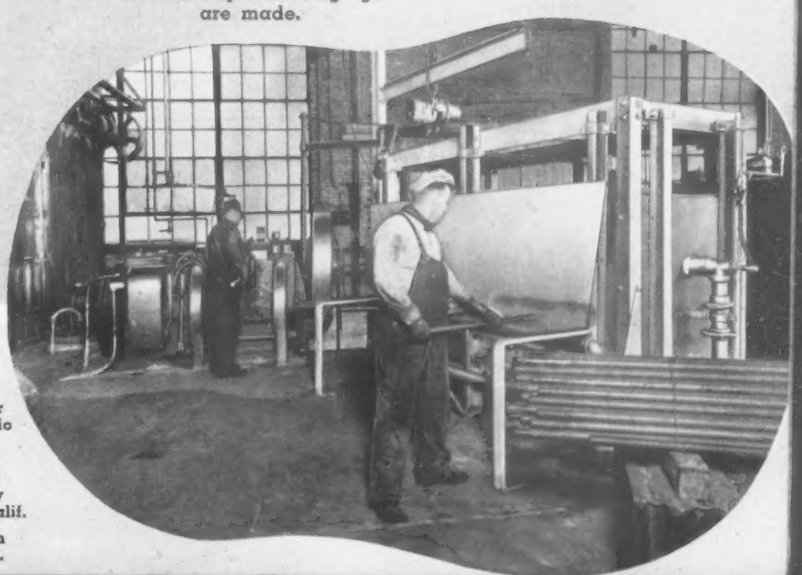
A corner in the Upset Forging Department where high production duplicate forgings are made.



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John L. Haney, Los Angeles, Calif.
Cecil H. Bacon, Seattle, Wash.

EDITORIAL

Re-employment: Industry's No. 1 Job

■ AS TIME passes on it becomes increasingly apparent that business generally heralded the results of the Nov. 8 elections as the best business news since 1929. Business for the first time in these long years feels that the average voter in this country has become alarmed at the creation of twenty billion dollars of additional debt while ten million men remain unemployed, and is regaining confidence in the merits of the free enterprise system. As a result, business looks to the future with the first real burst of business confidence it has felt in all these years.

It is well at this time to caution business that sanity is not yet definitely in the saddle. It remains to be seen whether federal and state governments will heed the changed thinking reflected by the election results. It remains to be seen what the next congress will do. It remains to be seen whether business will receive real encouragement from government, or whether it will be hampered by a stalemate. So business will do well not to count its chickens until they are hatched.

American Industry Must Set Its Own House in Order

Important among recent utterances is that by N. W. Prentis Jr., president, Armstrong Cork Co. He warned business (STEEL of Nov. 21, p. 18) not to become reactionary, complacent and overconfident now that it is regaining the public's ear. He urged business to adopt and maintain practices which will help bring social and political evolution into line with industrial evolution.

"The situation our country faces makes the call to American industry to set its own house in order particularly loud and clear," said Mr. Prentis. "Business must come into the court of public opinion with clean hands if it is to render its full patriotic duty to the nation in this crucial period."

Only by affirmation of fundamental principles of business responsibilities, declared Mr. Prentis, can businessmen "provide the intelligent, far-seeing stewardship that will sterilize economic and political radicalism."

Business will do well to place no false interpretation on the recent election results. All that the average voter did on Nov. 8 was to lodge an emphatic protest against governmental policies which had prevented an improvement in his state of happiness and security. The average voter does not know just how this happiness and security can be promoted. But unless his condition is improved he will register his discontent the next time he goes to the polls.

Free Enterprise System Must Provide Work for All

As long as ten million men remain unemployed, encouragement of the free enterprise system in this country is bound to be hampered because of urgent demands on public office-holders that something be done, and done quickly, about this problem. There will continue to be various beliefs as to how our present ills are to be cured. Undoubtedly there will be additional legislative approaches on this and other problems that spring out of unemployment—and some of them may prove harmful.

Business will fare in the long run in accordance with its ability to provide work and security to everybody able and willing to work.

For a time public relations was acclaimed as industry's No. 1 job. Today, industry's No. 1 job is that of re-employment. Unless that problem is solved, little real improvement can be made in relations between business and the general public.

THE BUSINESS TREND

Upswing in Industrial Activity Continues Unabated

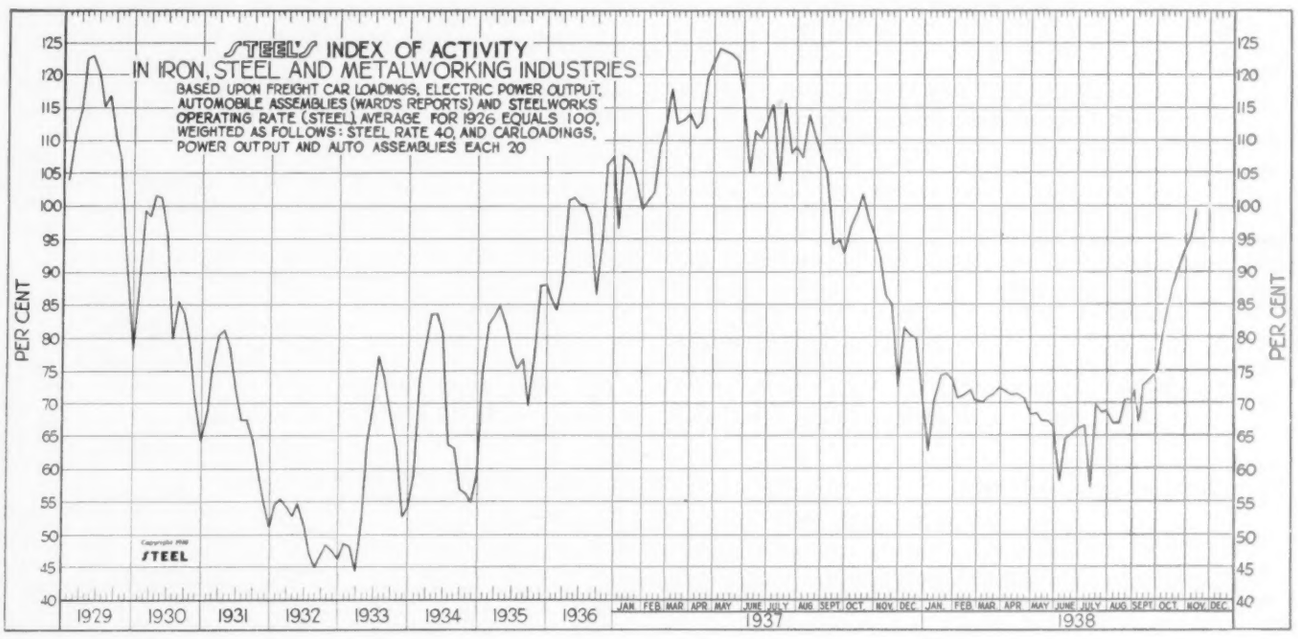
■ CONTINUED improvement in new demand is reflected in the upward movement of most industrial barometers. This condition in the iron, steel and metalworking industries caused STEEL'S index to touch a new high for this year in the week ended Nov. 19. The index now stands at 99.2 per cent, a gain of 3.3 points over the preceding week. A year ago the index stood at 84.9 per cent. The current upward tendency manifested by the index reflects the encouraging reports for all four of the business indicators from which the index is derived.

Steelmaking operations gained 1.5 points to 63.0 per cent in the week ended Nov. 19 to reach the highest level since Oct. 16, 1937, when the national steel rate also stood at 63.0 per cent. A slight decline in the rate of steel ingot operations is anticipated during Thanksgiving day week, reflecting in part the holiday interruption at some producing centers.

Automobile production continued to record encouraging gains in the week ended Nov. 19. Motor car output of 96,735 units represented an increase of approximately 10,000 over the 86,300 cars assembled in the week ended Nov. 12. A year ago automobile assemblies totaled 85,757 units. Encouraged by a steady rising bank of orders, automotive interests are expected to increase production schedules apparently through the next 30 days at least.

Early estimates of revenue freight carloadings for the week ended Nov. 19 indicate a contra-seasonal advance. Power output again moved upward in the latest week, but fell short of exceeding the peak this year of 2,226,035,000 kilowatt-hours consumed in the week ended Oct. 29.

Demand for machine tools and foundry equipment increased moderately in October, thus reversing the slight downward reaction recorded during September. The increase in domestic business was offset by a somewhat lower volume of foreign orders. The three months' average trend for both of these industrial indicators also continued to point upward. The Foundry Equipment Manufacturers association's index of net orders during October stood at 87.9 per cent, against 78.7 in September and 185.2 per cent in October last year. The associa-


STEEL'S INDEX OF ACTIVITY
IN IRON, STEEL AND METALWORKING INDUSTRIES
BASED UPON FREIGHT CAR LOADINGS, ELECTRIC POWER OUTPUT, AUTOMOBILE ASSEMBLIES (WARD'S REPORTS) AND STEELWORKS OPERATING RATE (STEEL) AVERAGE FOR 1926 EQUALS 100, WEIGHTED AS FOLLOWS: STEEL RATE 40, AND CARLOADINGS, POWER OUTPUT AND AUTO ASSEMBLIES EACH 20
PER CENT
STEEL
1929
1930
1931
1932
1933
1934
1935
1936
1937
1938

STEEL'S index of activity gained 3.3 points to 99.2 per cent in the week ended Nov. 19:

Week ending	1938	1937	1936	1935	1934	1933	1932	1931	1930	1929
Aug. 13	66.9	113.8	92.6	77.5	64.6	74.7	44.6	67.4	86.2	116.8
Aug. 20	70.5	110.3	97.7	77.0	61.4	74.2	44.9	67.3	88.5	116.4
Aug. 27	70.3	108.5	94.0	77.3	60.3	71.6	45.2	66.5	87.4	116.9
Sept. 3	72.3	104.8	87.5	70.9	55.1	70.3	45.4	65.3	79.0	106.3
Sept. 10	66.8	94.3	83.1	70.1	53.5	65.5	44.9	60.9	85.9	114.0
Sept. 17	72.9	95.0	90.1	69.4	58.7	69.1	47.8	65.6	86.2	112.2
Sept. 24	74.0	93.0	86.2	68.5	58.1	68.2	48.0	65.2	83.8	110.7
Oct. 1	74.9	96.6	89.0	73.3	59.3	66.9	47.7	62.4	81.0	109.1
Oct. 8	78.9	99.0	93.4	74.9	54.7	67.4	48.4	61.5	79.4	108.2
Oct. 15	84.3	101.8	95.5	77.4	56.4	66.0	48.7	57.9	77.5	106.1
Oct. 22	88.7	97.5	97.1	82.4	58.2	60.9	48.7	58.2	77.4	104.8
Oct. 29	91.4	95.7	99.1	86.4	56.3	58.0	48.3	55.9	72.5	102.5
Nov. 5	93.4	92.3	102.1	88.4	55.0	52.3	48.5	56.0	71.5	98.1
Nov. 12	95.9†	86.5	107.9	88.8	54.9	50.7	47.7	55.5	73.0	91.6
Nov. 19	99.2*	84.9	109.9	90.9	55.2	52.6	49.2	54.8	71.0	87.8

*Preliminary. †Revised.

tion reports that shipments also increased during October, but unfilled orders at the end of the month eased slightly from the volume reported at the close of September. The three month moving average for machine tool orders during October advanced to 118.8 per cent from 109.3 in September. While this represents the third consecutive monthly increase from the low this year of 75.5 per cent in July, it still remains substantially below the 180.8 per cent during October, 1937.

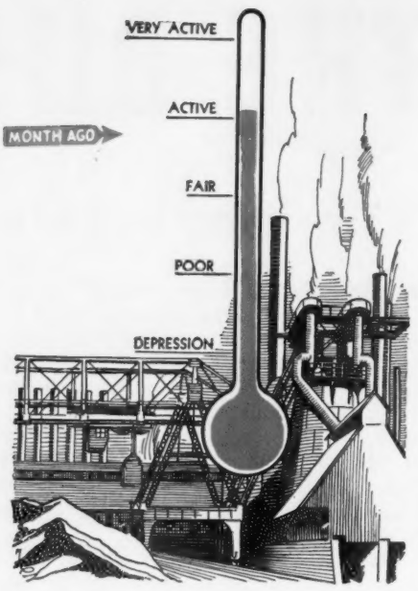
Where Business Stands

Monthly Averages, 1937=100

	Oct., 1938	Sept., 1938	Oct., 1937
Steel Ingot Output	75.1	66.1	43.4
Pig Iron Output	66.3	55.4	92.7
Freight Movement	97.3	89.5	109.2
Building Construction	135.4	100.4	90.0
Automobile Production	59.8*	21.4	80.8
Wholesale Prices	89.9*	90.7	101.3

*Preliminary.

Industrial Weather



TREND:

Upward

Further gains in both these important industrial indicators is predicted during November, reflecting the general improvement in industrial activity and the more optimistic outlook over the coming months.

Construction contracts awarded during October, according to F. W. Dodge Corp., represented 50,609,000 square feet of new floor space with a valuation of $357,698,000. This not only represents a substantial increase over September, but also exceeds the peak this year of 38,527,000 square feet during August valued at $313,141,000. In fact, October construction contracts as represented by 50,609,000 square feet of new floor area is the largest monthly total since May, 1930. In October last year construction awards represented 30,266,000 square feet valued at $202,081,000. However, in the first ten months this year construction contracts representing 335,343,000 square feet were considerably below the 388,028,000 square feet in the same period last year. Full benefits from the rapid upward trend in construction awards recently will not be felt until after the first of the year when actual work on many projects will get underway. One of the most encouraging aspects of the current trend in building construction is the improvement from private sources, particularly in the residential field.

While December normally experiences a seasonal downturn in activity, this may be averted this year. Automobile schedules and steelworks operations through the remainder of the year are counted on to bolster industrial activity. The federal government's pump-priming activities are gradually taking hold more positively and further extension of business stimulus of this character is expected. Another important favorable factor of longer term significance is the improved business sentiment following the recent political trends. The changed political complexion of congress seems to indicate there will be some modification of governmental methods and a more conscious effort to carry out federal policies without imposing excessive burdens on business.

The Barometer of Business

Industrial Indicators

	Oct., 1938	Sept., 1938	Oct., 1937
Pig iron output (daily average, tons)	66,694	56,103	93,259
Machine tool index	118.8	109.3	180.8
Finished steel shipments	663,287	577,666	792,310
Ingot output (daily average, tons)	119,921	106,310	130,488
Dodge building awards in 37 states (sq. ft.)	50,609,000	37,528,000	30,266,100
Automobile output	*250,000	89,623	337,979
Coal output (tons)	*34,900,000	32,276,000	40,833,000
Business failures; number	997	866	815
Business failures; liabilities	$13,219,000	$14,341,000	$14,079,000
Cement production (bbls.)	11,556,000	10,562,000	11,374,000
Cotton consumption (bales)	542,778	534,037	524,188
Car loadings (weekly av.)	706,511	650,112	792,519

*Preliminary.

Foreign Trade

	Oct., 1938	Sept., 1938	Oct., 1937
Exports	.....	$246,361,000	$333,136,000
Imports	.....	$167,651,000	$224,391,000
Gold exports	.....	$11,000	$232,000
Gold imports	.....	$520,907,000	$90,709,000

Financial Indicators

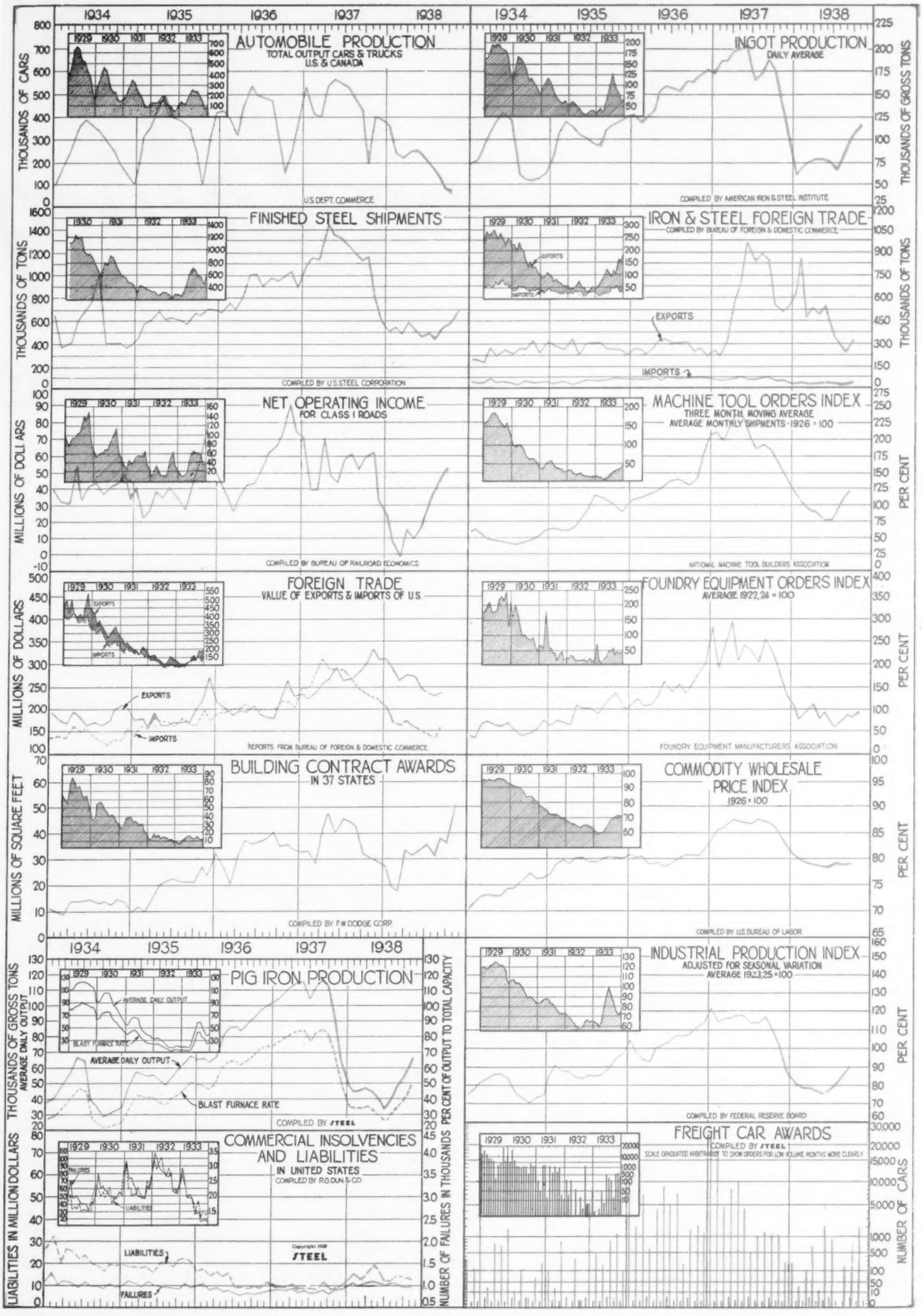
	Oct., 1938	Sept., 1938	Oct., 1937
25 Industrial stocks	$158.82	$170.67	$172.35
25 Rail stocks	$19.82	$19.38	$26.87
40 Bonds	$68.41	$68.60	$77.33
Bank clear'gs (000 omitted)	.....	$21,733,000	$24,076,000
Commercial paper rate, New York (per cent)	⅝–¾	¾	1
*Com'l loans (000 omitted)	$8,346,000	$8,241,000	$9,682,000
Federal Reserve ratio (per cent)	83.2	82.7	80.1
Railroad earnings	†$50,361,823	$45,376,622	$59,621,184
Stock sales, New York stock exchange	41,560,940	23,825,690	51,093,381
Bond sales (par value)	$185,452,075	$134,244,900	$227,291,275

*Leading member banks Federal Reserve System.
†September, August and September, respectively.

Commodity Prices

	Oct., 1938	Sept., 1938	Oct., 1937
STEEL'S composite average of 25 iron and steel prices	$36.48	$36.48	$39.59
U. S. Bureau of Labor index	*77.6	78.3	87.4
Wheat, cash (bushel)	$0.81	$0.80	$1.14
Corn, cash (bushel)	$0.63	$0.67	$0.86

*Preliminary.


AUTOMOBILE PRODUCTION
TOTAL OUTPUT CARS & TRUCKS U.S. & CANADA
U.S. DEPT. COMMERCE
THOUSANDS OF CARS
INGOT PRODUCTION
DAILY AVERAGE
COMPILED BY AMERICAN IRON & STEEL INSTITUTE
THOUSANDS OF GROSS TONS
FINISHED STEEL SHIPMENTS
COMPILED BY U.S. STEEL CORPORATION
THOUSANDS OF TONS
IRON & STEEL FOREIGN TRADE
COMPILED BY BUREAU OF FOREIGN & DOMESTIC COMMERCE
EXPORTS
IMPORTS
NET OPERATING INCOME
FOR CLASS I ROADS
COMPILED BY BUREAU OF RAILROAD ECONOMICS
MILLIONS OF DOLLARS
MACHINE TOOL ORDERS INDEX
THREE MONTH MOVING AVERAGE
AVERAGE MONTHLY SHIPMENTS - 1926 = 100
NATIONAL MACHINE TOOL BUILDERS ASSOCIATION
PER CENT
FOREIGN TRADE
VALUE OF EXPORTS & IMPORTS OF U.S.
EXPORTS
IMPORTS
REPORTS FROM BUREAU OF FOREIGN & DOMESTIC COMMERCE
MILLIONS OF DOLLARS
FOUNDRY EQUIPMENT ORDERS INDEX
AVERAGE 1922,24 = 100
FOUNDRY EQUIPMENT MANUFACTURERS ASSOCIATION
PER CENT
BUILDING CONTRACT AWARDS
IN 37 STATES
COMPILED BY F.W. DODGE CORP.
MILLIONS OF SQUARE FEET
COMMODITY WHOLESALE PRICE INDEX
1926 = 100
COMPILED BY U.S. BUREAU OF LABOR
PER CENT
PIG IRON PRODUCTION
AVERAGE DAILY OUTPUT
BLAST FURNACE RATE
COMPILED BY STEEL
THOUSANDS OF GROSS TONS AVERAGE DAILY OUTPUT
PER CENT OF OUTPUT TO TOTAL CAPACITY
INDUSTRIAL PRODUCTION INDEX
ADJUSTED FOR SEASONAL VARIATION
AVERAGE 1923,25 = 100
COMPILED BY FEDERAL RESERVE BOARD
PER CENT
COMMERCIAL INSOLVENCIES AND LIABILITIES
IN UNITED STATES
COMPILED BY R.G. DUN & CO.
FAILURES
LIABILITIES
Copyright 1938 STEEL
LIABILITIES IN MILLION DOLLARS
NUMBER OF FAILURES IN THOUSANDS
FREIGHT CAR AWARDS
COMPILED BY STEEL
SCALE GRADUATED ARBITRARILY TO SHOW ORDERS FOR LOW VOLUME MONTHS MORE CLEARLY
NUMBER OF CARS

Stimulating

By Development

By **HARRY R. ANSEL**
President
The Kor-Lok Co.
Cleveland

■ WITHIN recent years, more than one general manager of a formerly prosperous manufacturing firm has thought long and hard as to what could be done to stimulate sales, change the trend of diminishing reserves and continue the payment of dividends. In many cases, it has been so serious that something had to be done immediately to save the company from failure. Some companies had allowed their reserves to become so far depleted that when they decided to do something to stimulate sales, there were no funds with which to proceed. A sick business must be treated while the patient still has enough vitality to respond.

Sales Provide Index

Sales volume is the main index of the state of a business. If sales are being made but the firm is losing money, something can usually be done about that within the organization. As long as business is being transacted in a normal volume, there is every reason to believe that good management will see to it that a profit is made.

But when sales volume fades away and no amount of pressure on the sales department produces the sales you must have to keep going, it becomes another problem. Diagnosis may lead to the sad realization that your market no longer wants to buy what you have to sell. Then new products must be found for which there is an increasing rather than a diminishing market.

Analysis may show lowered sales volume is due to one or more of the following factors: Poor general business conditions — depression, market saturation, improved processes or equipment resulting in the line becoming obsolete, more agressive or more attractive sales policies on the part of competitors.

If poor business conditions are responsible, if the firm's customers would like to buy but cannot be induced to sign the purchase order, two things can be done: Study means to make it easier for the customer to buy. If it is possible to show lower costs to the customer, try to work out some method whereby the savings from the use of new equipment can be made to pay for the new equipment. Develop new products to diversify the line, making sure that the new products will not also be held back by influences retarding present line. For instance, I know of a large paint manufacturing firm that is in the red on its paint products but is showing enough profit on a food products line to keep the company, as a whole, in the black.

If the market saturation is the cause, there is no reason to delay an effort to get new products. Waiting for better business conditions will not help this situation. Put the physical equipment of the business to work on something else as soon as possible. However, do not be too easily convinced that the market is saturated. Finding new uses for old products is a wonderful way to produce a steep upward incline on the sales chart.

Where the line has been made obsolete, it may be possible to catch up with competitors by an intensive effort. If this is undertaken, beware the pitfalls of copying existing equipment because it frequently happens that by the time the copying is completed the parade has again moved forward and the line is still obsolete. You must get out in front and lead the parade if you can. There is more money to be made in being the drum major at the head of the processing than the calliope bringing up the rear.

Where the sales force is handicapped by the sales of policy of competitors, this is a marketing problem and a change in tactics may be necessary. If there is just a single important feature in your product that is not found in your competitor's product, hammer away on that sales appeal and try, through development engineering, to widen the breach between you and your competitor.

From the above, it is apparent that development engineering may be divided broadly into two general divisions: Improvement of, or additions to, an existing line of products, for sale through the same or related sales channels; the search for new products for sale through new sales channels to obtain the benefits of diversification.

Salesmen Know Weakness

The improvement of, or addition to, an existing line of products can sometimes be done by stimulating the efforts of existing personnel but some one with vision and organizing ability must be in charge of the work. The first place to go for new ideas is out in the field where both your equipment and that of your competitor is being used. Your sales force will know where your line is strong and where it is weak. Contact your sales force man to man in the field and also bring them together for discussion in open meetings. Every time you lose an order—find out why! Be honest with yourself, too.

A qualified development engineer,

When profits shrink

what to do and how to do it

Sales Engineering

preferably with a fresh view point, will know how to assemble data, analyze competitive products, seek ideas from salesmen and users of the products, and map out for you a program that will produce results. In any undertaking, you should know where you are going before you start getting into high speed.

Having decided that you want to make certain changes in the present line or add certain items of new products to that line, build Solid Sales Features into them. It is useless to make changes unless the revised equipment will sell. The customer must be given tangible reasons for buying your equipment. Especially when you will ask him to pay you more money than elsewhere, you must make it worth his while to buy your stuff. There is where the true development engineer's knowledge of selling lays the roadway along which the sales department can travel toward increased sales volume.

Developments Neglected

The need for development engineering is constant in most manufacturing firms but is neglected by many. During that period of prosperity following the founding of the business, and while it is being directed by the force and foresightedness of the man who created it, we usually find development work is not neglected. Later, however, when control may have passed into other hands, the effect of the original guiding genius may be lost and it becomes necessary to use planned stimulus or, in other words, to create a development engineering department.

Deciding that the business should be diversified and new products obtained should be followed up by engaging a development engineer. Going into the market for knowledge and ability along a certain line, an analysis of the work to be done will bring to the light the kind of a man it will take to do the job.

Development engineering includes much more than a designing engineer working with slide rule and drawing board. The true development engineer is, of course, well trained technically and able to direct design work but it is desirable also that we have had extensive sales, patent and general business experience. Problems of creating new products and of marketing those products go hand in hand. There is no advantage to be gained or profit to be made from a new product, however meritorious it may be, unless it is feasible for the manufacturer to introduce the product into trade channels.

The development engineering and the sales manager have a common problem, to manufacture and sell goods. Since it is somewhat unusual for the sales manager to know a great deal about engineering, it becomes necessary for the development engineer to know sales and marketing so the two executives can speak a common language while working on the common problem.

Before you can develop anything, there must be an idea. If the idea is lacking, you want either a man who has an idea or, that not being readily obtainable, a man who can create or locate ideas to suit your needs.

With one or more ideas to start with, determine whether or not those ideas are original. A preliminary search in the patent office will throw considerable light on the subject and may lead to a revision of the ideas—or new ones.

Hold a round table discussion to get all possible view points on the practicability of the idea. Find as many objections as you can and write them all down for future reference.

Make a preliminary study of the market potential and try to determine that, if the product can be made at a certain price—can it be sold, where, how and in what volume.

Prepare preliminary engineering studies, preliminary drawings and estimates of cost.

File patent applications.

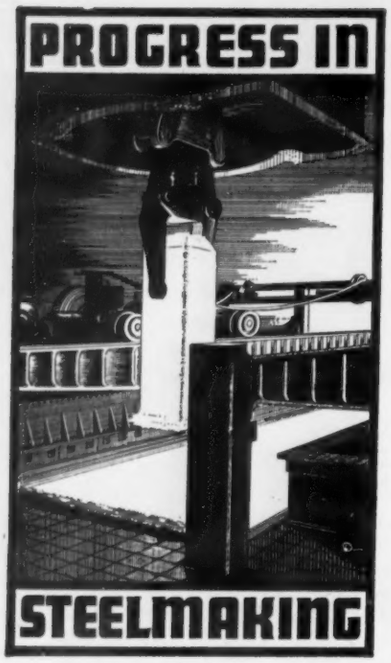
Report To Directors

If the project being considered still looks good, prepare a report for the management to submit to the board of directors. This should include: Explanation of the idea; market potential probability of obtaining patent protection; length of time and amount of money required for experimental work; length of time and amount of money required for getting into production with an itemized list of requirements for floor space, machines, tools, dies, jigs, etc.; outline of marketing plan by sales department; length of time and amount of money required for introduction of product to the market; total investment estimated to be necessary before the undertaking can be put on a profitable basis.

If instructed by the directors and the management to proceed, continue with experimental work and working models.

After producing a satisfactory working model, or building a satisfactory unit, scrutinize the design as a whole and also as individual parts under the following headings: Is the design fundamentally sound; can it be simplified; can the cost be reduced; will the product stand up in service; can the appearance be improved; will the consumer be able to use it; have you used castings, stamping, forging, die castings, etc.,

(*Please turn to Page* 68)



Pulverized Coal Firing

Recent developments connected with use of pulverized coal indicate this fuel may provide significant economies in metal melting and processing furnaces

By W. R. BEAN
Vice President
Whiting Corp.
Harvey, Ill.

■ THERE ARE but two real problems involved in pulverized coal firing of openhearths. One of these, fouling of checkers with fused ash, can be overcome by changes in construction. The other, coal fineness, has been solved by finer pulverization.

The outstanding difference between the one plant which has continued to melt with pulverized coal and others which failed appears to be in coal fineness. In this case coal was, and is, pulverized to a fineness of 95 per cent through 250 mesh. Checker construction was modified, also.

With present knowledge of coal characteristics, pulverization and burning of coal, including the advantages of the direct firing unit in feed control, it is quite logical to assume that for a small fraction of the money spent in former attempts successful results might now be obtained.

Today the best results in melting furnace firing are obtained from low and medium volatile coals such as Pocahontas and New River, which up to ten years ago it was considered suicide to attempt to use. These coals with high heat value, 14,500 to 15,000 B.t.u.; low ash, 4.00 to 5.5 per cent; and low sulfur, 0.40 to 0.65 per cent, are extremely "hot" coals and besides are readily pulverized having a grindability of 100 per cent plus. Extreme fineness therefore can be obtained at low power and maintenance cost in pulverization. Short flame is another inherent advantage of these coals. Price on a delivered B.t.u. basis must, of course, be considered.

A natural question here is why pulverized coal in melting of steel and other metals? The answer is that in most of the industrial sections of the United States, cost of coal on a heat value basis is approximately 50 per cent as much as oil and in some instances an even more favorable comparison is made with natural gas.

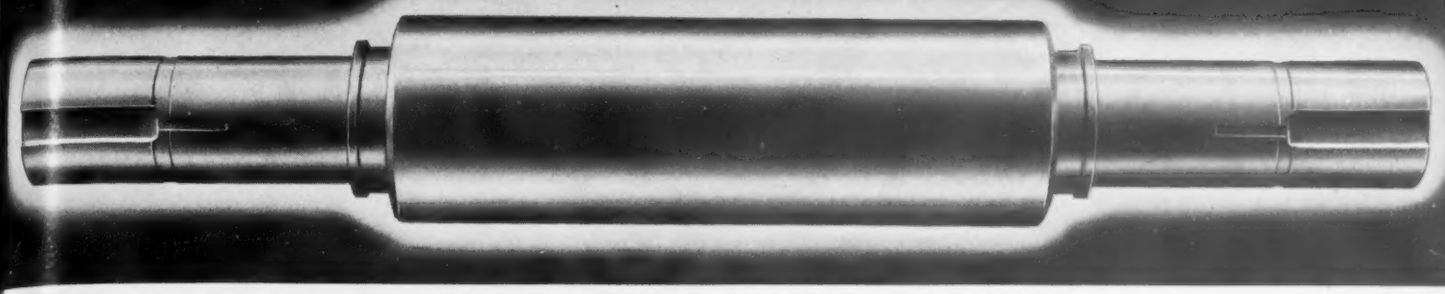
For ready comparison of coal and oil costs, the basis of 10 pounds of coal, 140,000 to 150,000 B.t.u.'s equals one gallon of oil in similar B.t.u. range may be used. Therefore, 2c oil equals $4.00 coal, 3c oil equals $6.00 coal, 4c oil equals $8.00 coal and so on through the ranges. Expressed in a different manner, 28 million Bt.u.'s of coal (1 ton) costs $4.00 whereas 28 million B.t.u. (200 gallons) of oil at 4c will cost $8.00.

Since the question of cost of pulverization of coal is quite surely to be raised, assume that in comparing

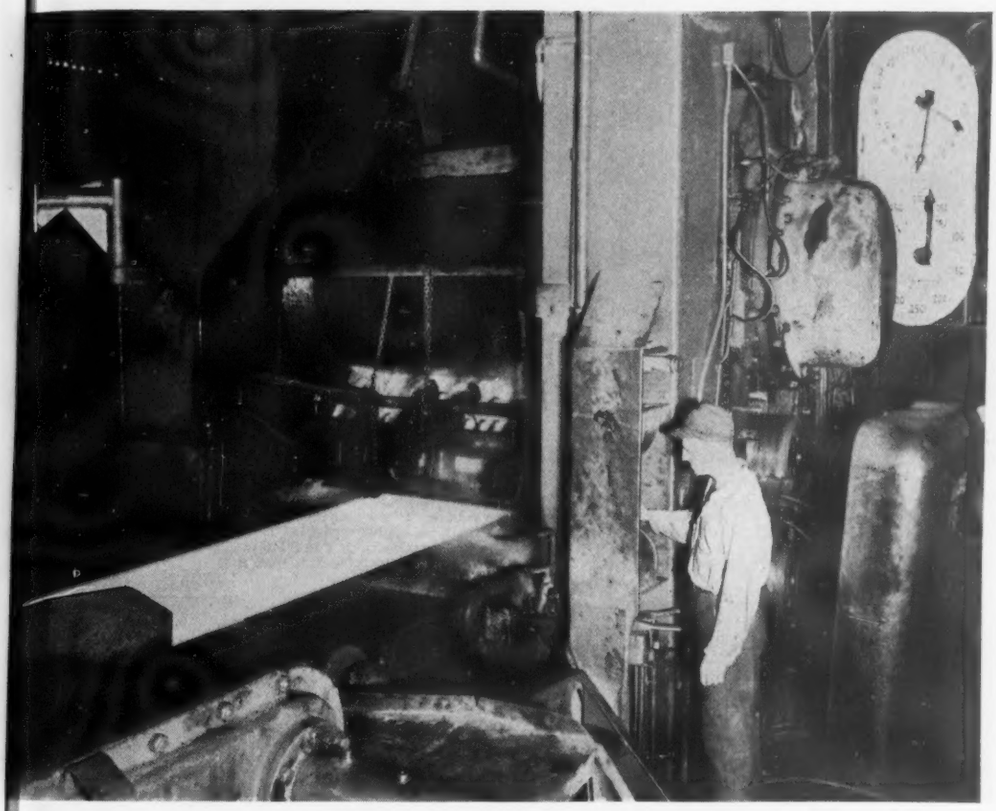
Abstract from paper presented at joint A.I.M.E. Coal and A.S.M.E. Fuels meeting, Chicago, Oct. 13-15, 1938.

For Easy Loading

■ **Rivet kegs weighing 150 to 200 pounds apiece are easily handled on this flat plate lift platform because they can be slid, not lifted, on or off at floor level as well as at any other height within the 75-inch range of this unit. Photo courtesy Towmotor Co., Cleveland**



CROMONITE ROLLS CONTINENTAL'S CONTRIBUTION TO THE STEEL INDUSTRY



PIONEERING IN HIGH-SPEED PRODUCTION

Continental engineers are constantly on the job, pioneering new standards of high-speed roll perfection. They were the first to develop Cromonite—the original hard alloy chill roll to serve hot and cold strip mills. Cromonite is only one of their contributions to the progress of the steel industry.

ANOTHER FIRST FOR CONTINENTAL

Until Continental's engineers developed Cromonite Chill Rolls, it was impossible to secure the uniform, satin-smooth, scale-tight finishes universally demanded by industry. Today Cromonite is the recognized leader in hard alloy roll equipment for denser, more compact surfaces. This practical pioneering development by Continental was not only first to provide the means for obtaining finer finishes but also made possible greater tonnage and longer roll life.

3 PLANTS SERVING THE STEEL INDUSTRY

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CONTINENTAL ROLL & STEEL FOUNDRY COMPANY

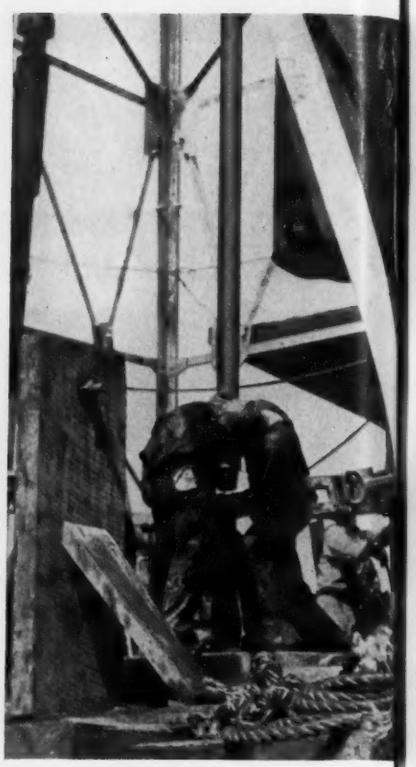
Manufacturers of Rolling Mill Equipment, including Steel and Alloy Steel Castings, Iron and Alloy Iron Rolls, Steel and Alloy Steel Rolls

CHICAGO, ILL. and PITTSBURGH, PA.

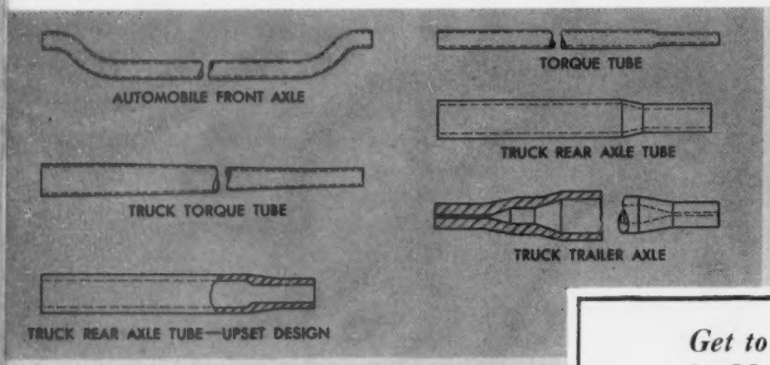
Continental Direct Fired Annealing Furnaces
Continental Universal Industrial Gas Burners
Pittsburgh-Continental Annealing Covers

INDUSTRY ASSIGNS

IN REFINERIES, COMPRESSOR STATIONS, ETC., piping must be strong to withstand high pressure, and ductile to permit bending with no sacrifice in wall strength. That's why NATIONAL Seamless is first choice for piping in applications like this Texas compressor station. To refineries, NATIONAL offers the most complete available line of still tubes—24 different analyses.



THE OIL INDUSTRY is a large user of NATIONAL Seamless because it needs the strongest, toughest materials available. These men are stabbing in a section of NATIONAL Seamless Drill Pipe, the type that has enabled drillers to break many records for deep drilling. NATIONAL Seamless Casing and Tubing are also favorites with oil men because of their rugged strength and dependability.



AUTOMOBILE PARTS are of vital importance, because on their performance depends the performance of the entire car. That's why many manufacturers insist on Shelby Seamless Tubing parts like these. In machine parts, too, this precision tubing makes possible fine workmanship because it machines so readily.

IN AIRCRAFT CONSTRUCTION, strength-weight ratio takes precedence over all other properties. That's why Shelby Seamless Aircraft Tubing, a product of National Tube, is a favorite with aeronautical engineers. This new basic training plane, without the fuselage covering, illustrates the extensive use of Shelby.

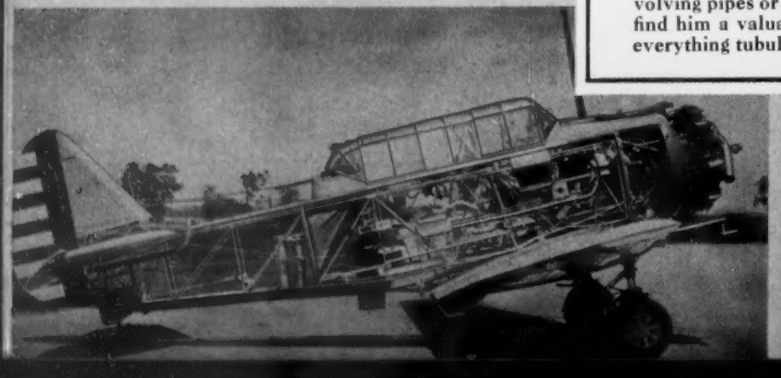
SAFE GAS MAINS. NATIONAL Seamless was selected for lines to replace mains washed out by the floods which occurred in Southern California last spring. This pipe bridge, also of NATIONAL, was constructed to carry two NATIONAL Seamless mains respectively 6 and 8 inches O.D., across Monrovia Canyon.

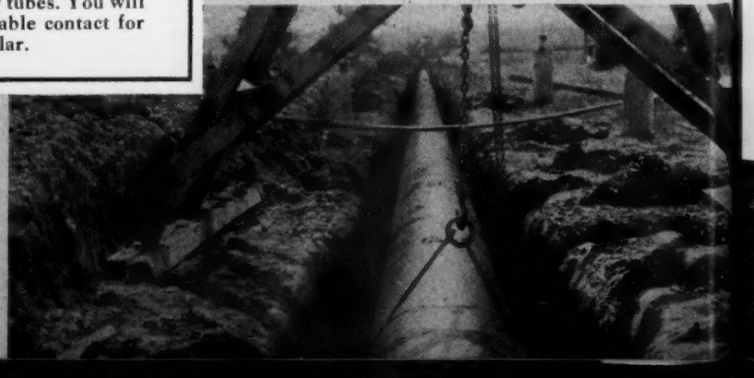
WATER MAINS operated at high pressures require NATIONAL Seamless for safe, dependable service. This NATIONAL pipe line serves a large city in the west. It is here that NATIONAL Seamless proves its ability to withstand vibrations, pressure surges, and even possible ground settlement and sudden shocks.

Get to Know the Man From

NATIONAL TUBE

The man from National Tube offers you valuable engineering service, based on a vast store of practical experience. His job is to give you worthwhile assistance in solving any problem involving pipes or tubes. You will find him a valuable contact for everything tubular.





ITS *Toughest Tubing Jobs* TO SEAMLESS

EVERY day brings in more proof that NATIONAL Seamless is the closest approach to the perfect tube. Pipe lines withstand higher pressures; oil well drillers bore deeper into the earth; steam boilers are safer; vital machine parts are stronger, longer lasting.

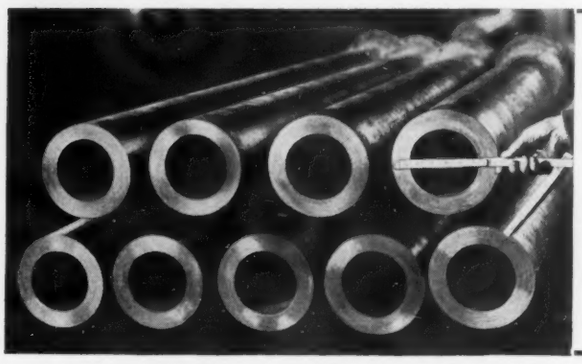
Producing the finest possible pipe and tubes is the job to which National Tube assigned itself many years ago. Before much time had elapsed, it became evident that seamless was destined to outstrip all other types of tubular products. By constant research and development, National Tube steadily improved manufacturing technique, effected ingenious advances that have made seamless America's preferred pipe.

The net result of this achievement is that NATIONAL Tube offers to all industry a complete line of seamless pipe and tubes of unvarying high wall strength, thoroughly uniform both in dimensions and in physical properties.

Today, industrial men are entrusting their toughest jobs to NATIONAL Seamless. In almost any industry you can name, seamless has been the instrument by which difficult problems have been solved.

Whenever you need a pipe or tube that has an extra margin of safety, pipe that must not fail, you can safely entrust the job to NATIONAL Seamless "Walls Without Welds." It is available in sizes ranging from 3/16-inch mechanical tubing to 24-inch O.D. pipe.

NATIONAL SEAMLESS means pierced from solid billets of the finest quality steel. Only sound and flawless steel can be used for piercing, since no defects can be covered up in this process. A thorough system of inspection and tests at every stage in production gives you double assurance that each length of NATIONAL Seamless will display the same uniform wall strength, dimensional accuracy, and uniformity in all physical properties.



HIGH-PRESSURE STEAM. This extra-heavy NATIONAL Seamless is ready for installation in an industrial power plant operating at 840 pounds pressure. This pipe measures 7⅝ inches O.D., 1.31 inches thick. Ten-inch Vanstone flanges were turned on the pipe in a single heat, machined to a mirror finish, and made up without gaskets.

FOR STEAM BOILERS, stationary, locomotive, or marine, there are no finer, safer tubes than NATIONAL Seamless. They are easy to bead, roll, and head into flue sheets, and having no weld, there is no line of potential weakness. 25 recently built Hudson-type locomotives of New York Central are equipped with NATIONAL Seamless Boiler Tubes.

NATIONAL TUBE COMPANY

PITTSBURGH, PA.

Columbia Steel Company, San Francisco, *Pacific Coast Distributors* · United States Steel Products Company, New York, *Export Distributors*

UNITED STATES STEEL

with oil the item of pulverization of coal will offset the cost of heating, pumping and atomizing of oil. For example one ton of coal costs $0.50 for pulverization; the equivalent oil, 200 gallons at $0.0025 per gallon for heating, etc., also costs $0.50.

It should be stated with emphasis that only high grade coal, especially selected and properly prepared is suitable for the firing of iron and steel melting furnaces and that coals of high quality are also the best suited and most desirable for annealing furnace firing.

Sulfur content, although having little relation to the thermal aspect of fuel for metallurgical furnace operation is a most important factor since sulfur is taken up by the metal from the fuel. Regardless of the form in which present and regardless of the method of firing employed, although the rate of absorption may vary with methods, this element must be relatively low and for practical considerations not in excess of 1.00 per cent. Coal of slightly higher content may be employed in annealing oven firing, but not for melting.

Of the elements which play a part in the thermal efficiency and in the metallurgical results as well, ash content is a factor because of the effect which this has on the B.t.u. content and in turn the effect which B.t.u. content has upon flame temperature, the most vital of all factors in the use of coal in metallurgical furnace operation. Many times the question has been raised as to why some of the better grades of the Middle West coals which appear to be of suitable analysis cannot be used successfully in melting furnace operation. The fact is that these coals being lower in B.t.u. value as a result of high moisture content, do not produce the temperature necessary for melting and superheating a metal charge.

It was formerly considered that only coals of high volatile, long flame characteristics were suited to air furnace firing, the range being from 33 to 38 per cent volatile combustible matter. It is true that only coals of this range are suitable for hand firing but recent experience has widened the range of volatile content for pulverized coal firing so that the minimum may now be stated as 18 per cent.

Prior to 1925, all of the pulverized coal installations in the metallurgical industry were of the central station or bin feeder type. Since 1925 the tendency has been quite definitely to the direct firing or unit type of pulverizer. This change is emphasized, because the requirements from the standpoint of the user are somewhat different with the two types of equipment.

In the central station system, slack coal up to 1½-inch in size and with any reasonable moisture content inherent and absorbed, taken up in transportation or storage, can be used successfully due to the fact that the process involves a drying operation which removes the moisture prior to pulverizing.

Determine Rate of Feed

For use in the direct firing units, moisture content is of much greater importance due to the effect which this has upon the rate of feed; also, size is an important factor in determining the rate of feed. If coal is graded as to size, 1-inch nut for example, can be fed uniformly and with entire satisfaction but 1-inch nut and slack segregates in the feeder hoppers resulting in an irregularity in the feed to pulverizer and since direct firing units deliver to the burner at the rate at which the coal is fed, this is an important factor for successful furnace operation and a uniform composition of product from heat to heat and from day to day.

A granular product can be fed more uniformly than a finely pulverized product, especially if the latter contains an appreciable amount of moisture. The factors which have brought about the wider use of the direct firing unit in the metallurgical industry involve first, the all important one of economy, a lower capital investment and lower cost of pulverization of fuel, and second, the fact that granular coal of proper size, preferably ⅝-inch and under, can be fed more uniformly than pulverized coal through any type of feeder that has been devised up to this time.

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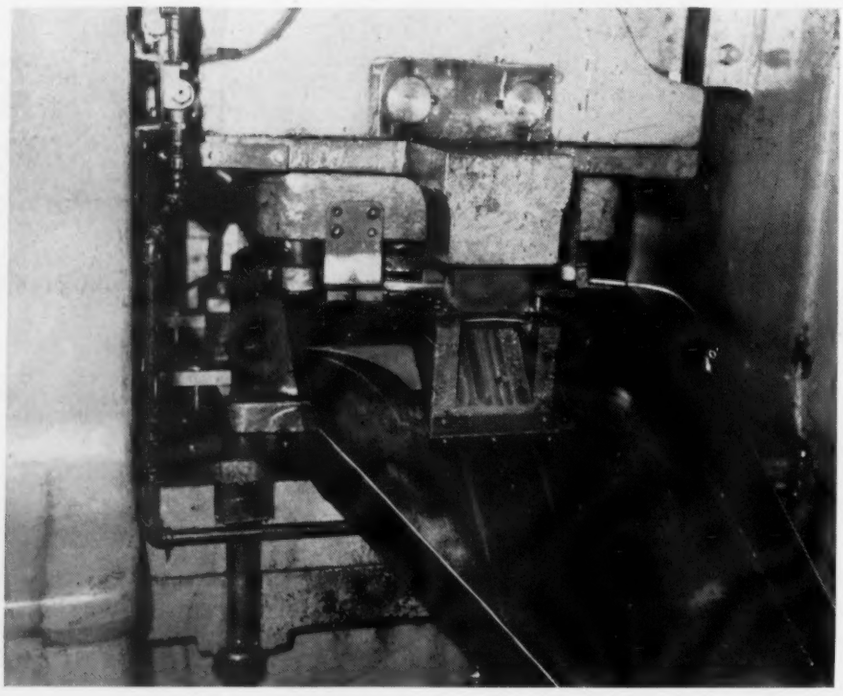
Makes Scrap Easy to Handle



■ **By using auxiliary cutters on the dies to cut up skeleton material coming through press, scrap is reduced to small flat pieces which are easily handled by belt conveyors, automatic dumping hoppers, etc. Photo courtesy Inland Mfg. Co. division of General Motors Corp., Dayton, Ohio**

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Stainless Washers

Fixtures permit complete positioning of work, prevent distortion in welding thin sheets of stainless steel. Work set up for 100 per cent penetration in one pass

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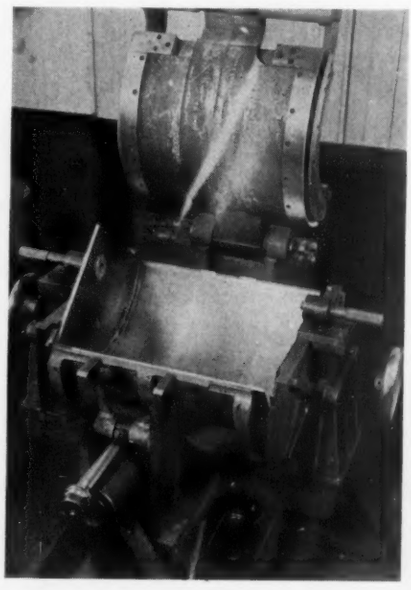


with welded construction which eliminates all overlapping seams, prevents accumulation in joints and makes all interiors easily cleaned.

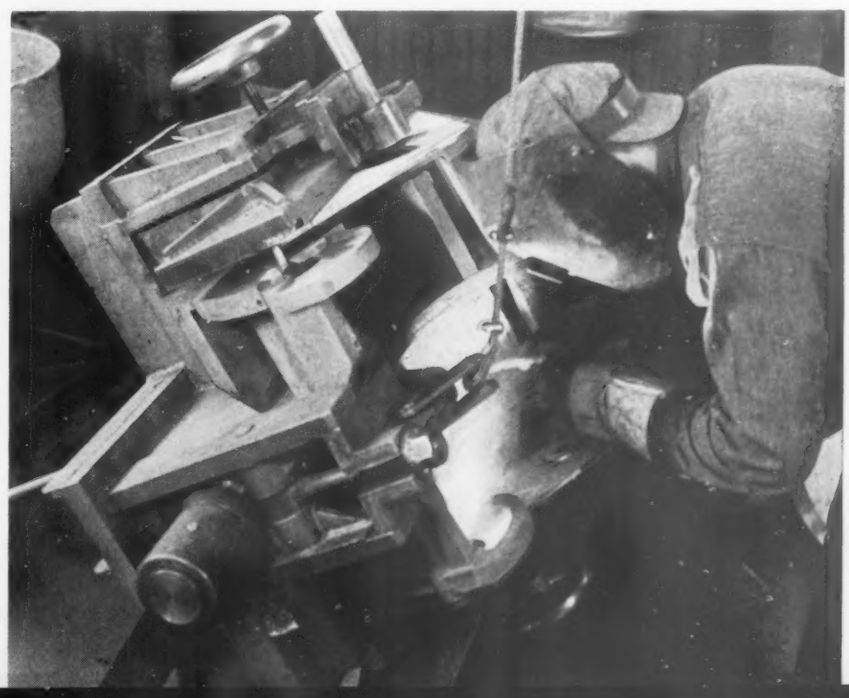
However, use of welded stainless steel for these various parts was found to require special equipment to handle this work properly since it was absolutely essential that the finished chambers and tanks be smooth and without distortion of any type. Appearance is an important selling point here and distortion, especially, had to be guarded against as the highly reflecting surfaces bring out each little hollow or uneveness near the joint.

First step in making good welds consists in cutting pieces to exact dimensions required. Corner joints are all of the straight butt-weld type. Thus it is essential that sheets be trimmed exactly to dimension so they neither overlap nor fail to come together at joint. All these joints are made in jigs or fixtures. Extremely little tolerance is permitted in size of sheet.

Fig. 3 shows a modern type of shear which handles up to 3/16-inch stainless steel plate for dishwasher fabrication. It is equipped with hydraulic holddowns and a shadow gage. This utilizes various lights to cast a shadow on the sheet metal exactly where the shear blade will cut it, permitting accuracy within 0.005-inch. Another interesting machine is a huge power brake which easily bends a right angle in a 10-foot length of 12-gage stainless steel.

Stainless steel hoods used on the smaller washers are welded in the fixture shown in Fig. 1. A hood consists of three pieces, the curved top section and the two ends. In welding this assembly the two ends and top section are placed in the fixture the lid of which is shown in the raised pieces in Fig. 1. The two ends have two bearing flanges fastened in place. Two pins are inserted in these openings to locate the ends accurately in the fixture.

Fig. 1 (Left)—Hood jig in open position. Fig. 2 (Below)—Hood jig closed and work positioned for downhand welding



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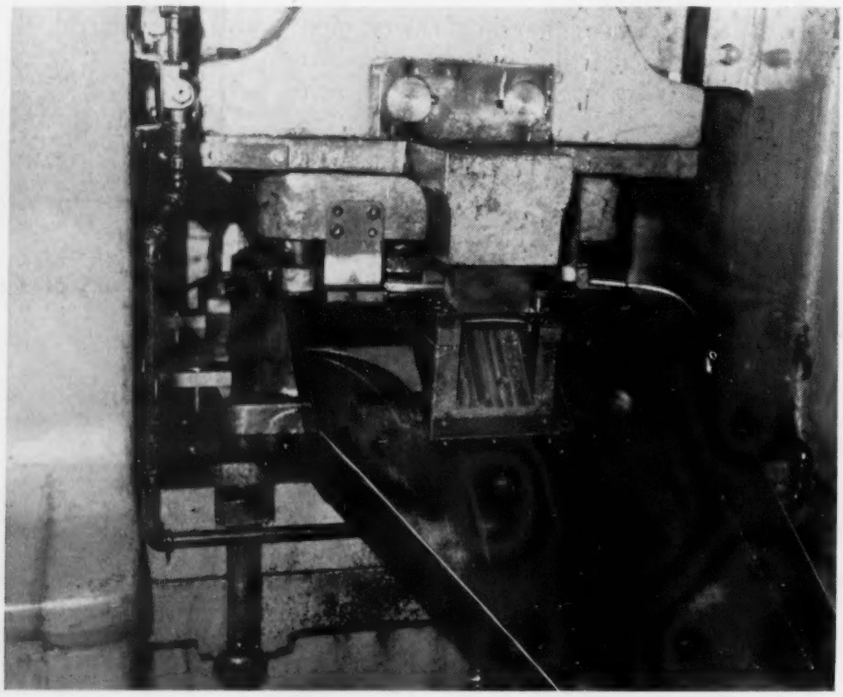

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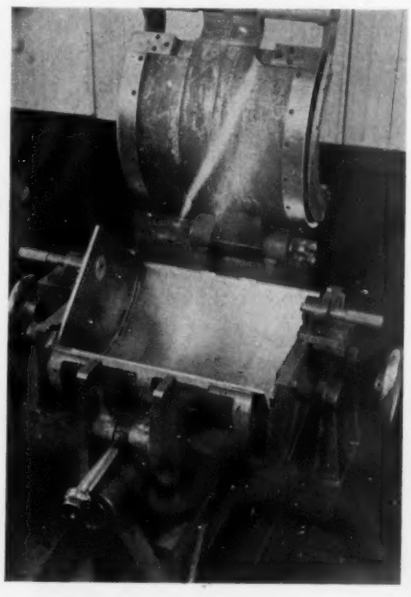

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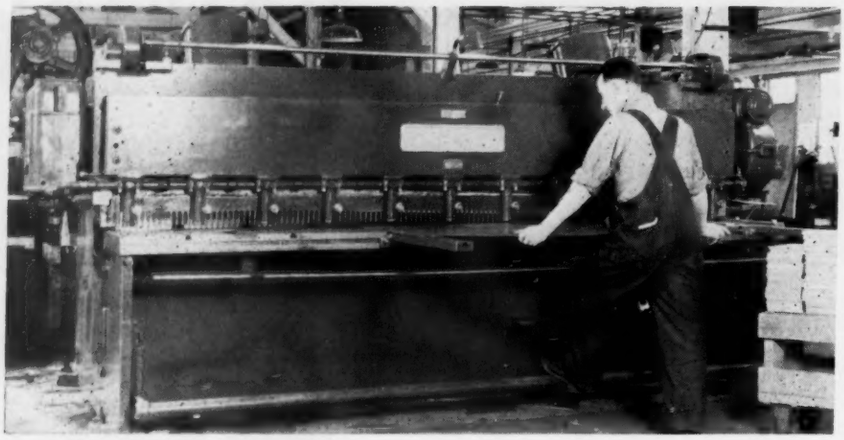


Fig. 3—Shadow-gage shear, a great aid in obtaining accurate cuts

Lid of fixture then is dropped and clamped in place.

As will be noted in the illustration, this fixture is made of extremely heavy plates of steel, formed, welded and furnished with heavy copper backing strips fastened along the joints. With the lid down, the hood parts are arc welded through an opening in a corner of the lid sections. This opening may be seen around the right-hand curved portion of the lid in Fig. 1. The heavy construction and the copper backing strips conduct heat rapidly away from the welded joint and keep the stainless steel sections cool, thus reducing distortion to a negligible quantity.

Jigs Can Be Tilted

Speed clamps and eccentric toggle are used wherever possible to facilitate hand operation. Also jigs and fixtures are mounted so they may be tilted to permit positioning of welds. Fig. 2 shows how the hood welding fixture in Fig. 1 appears when closed and tilted to the operating position.

One end of a cable is connected to the lid. Cable extends up over a pulley and has a weight on its other end, which balances the lid. This makes it easy to raise and lower the heavy lid.

Stainless steel electrodes are used, about 3/16-inch in diameter. Welding currents employed range between 150 and 200 amperes, the welds being made in one pass with 100 per cent penetration. Welds subsequently are finished on the outside by a light grind and then polished.

Fig. 4 shows a large fixture used in welding long stainless steel chambers for dishwashers. This fixture also is made of heavy steel stock. Heavy copper strips also are bolted to the backup plate. Joints welded here likewise are straight butt-welded corner joints with no overlap and employ 100 per cent penetration. Fixture employs a wooden facing on the bed to avoid damaging finish of the stainless steel parts being welded. The weld is made through V-shaped openings in the fixture from the inside of the 90-degree corner angle. Provision also is made for clamping the vertical plate seen behind the I-beam section in the illustration.

Upon completion of this weld the piece is removed from the fixture, turned 180 degrees on the bottom and the second side clamped in place and welded. The main top section of the fixture pivots around on the right-hand support into a clear space at rear of fixture which permits assembled tank to drop out of the fixture. Tight clamping and use of copper strips bolted to the heavy backup plates assure minimum distortion from welding. This same fixture accommodates a number of sizes of wash chambers by use of different movable sections.

Frames Welded Also

Frames for dishwashers also utilize welded construction and are assembled in fixtures such as the one shown in Fig. 5. Provision is made for clamping all of the pieces forming bottom frame, legs and reinforcing members in the fixture. The bed of this fixture has holes at intervals so sections of fixture constituting corner clamps can be spaced at various positions on the bed. This makes it possible to fabricate dishwasher frames of various sizes in this one fixture. Clamps and fixture members are placed so all welds are accessible from inside of frame. Complete assembly is designed so weld beads some on inside surfaces of members. This eliminates necessity of finishing the welds which otherwise would involve a certain amount of grinding, sanding and polishing.

Electric arc welding is used entirely in fabrication work due to its speed, low cost and ease of manipulation. Since distortion is not a serious factor in production of frames, no backup plates are required and the welding fixture itself is of lighter construction than those employed in welding stainless steel fabrications, shown in Fig. 1, 2 and 4.

Among other equipment manufactured at the Hobart plant, coffee mills occupy a prominent position. If all Hobart coffee mills sold in one year were operated at the same time

(*Please turn to Page* 56)

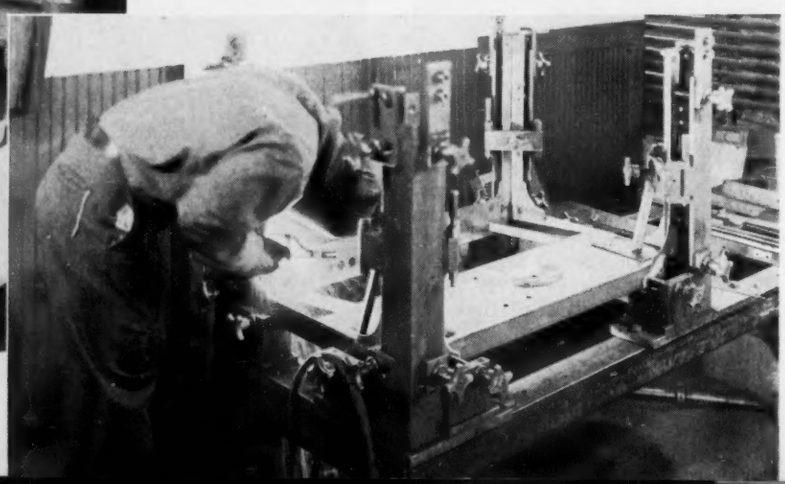


Fig. 4 (left)—Jig for welding washer chambers. Fig. 5 (below)—Highly flexible setup for welding frames

Timing in Forming

A natural series of swings and turns forms entire door in only four handling operations. Combining work on one press reduces press time 60 per cent; needs only three men

By F. E. GOODING

■ BY A CAREFULLY planned and timed series of operations which form reinforcements, Fig. 1, on two sides and two ends of locker doors, this work has been reduced from an 8-man operation to where three men working simultaneously on one press brake handle it easily. At Durabilt Steel Locker Co., Aurora, Ill., these reinforcements consist of making right-angle brake bends on ends and sides of a locker door.

The 15-foot press brake is set up with gooseneck forming tools and stops which permit making all breaks in sequence with a single setting. The setup is for both sides and ends thus permitting three separate operations to be formed with each release of the clutch except on the last pieces going through the press.

Three men on the job, Fig. 2, are referred to as helper A, operator B, and helper C. The first helper A lifts the sheared, punched and notched sheet from the truck and breaks one end. He then swings the door 180 degrees and breaks other end and leaves door at rest between him and operator B. Then he turns to pick up the next door from the truck.

Operator B picks up the door, swings it 90 degrees and forms one break on side. Next he turns it end for end, forms first break on other side and on next stroke forms the second break on same side.

Second helper C now takes door from rest position and forms third break on same side; swings it 180 degrees and forms second or final break on opposite side. After this he loads door on truck.

It is to be noticed that while first helper A is reaching for door from stack previous to breaking and while second helper C is loading completed door on truck, operator B is making a second break on one side previously referred to—which means that on this stroke of press only one piece is in the machine.

Forming press is controlled by the operator B. The timing is such that the first helper A lays down his door and picks up the next while the operator B is forming the second side. The second helper C picks up work from operator B and forms his side while the second side is being formed, piles it on the truck and gets the next door after the first side of the next door is formed by operator B.

The timing of these operations is more difficult to describe than to do. However, it is a natural sequence of swings and turns as the men pick up work, form and turn to set down, which brings the work in proper position for similar handling by the next man or piling.

The two helpers A and C pick up or pile work on trucks while the operator B forms one of the breaks as noted above. This gives them ample time to do this and get the next door in position at the press brake. There is no danger to the men from the single control by operator B as the work is large enough so their hands are never close to the forming tools. The only possibility of damage is for a man to be slow in inserting his work but as this is simply pushed ahead to the stops after each break he soon develops the rythm of the second or controlling operator.

The gooseneck forming tools are in sections for the different standard widths or lengths of locker

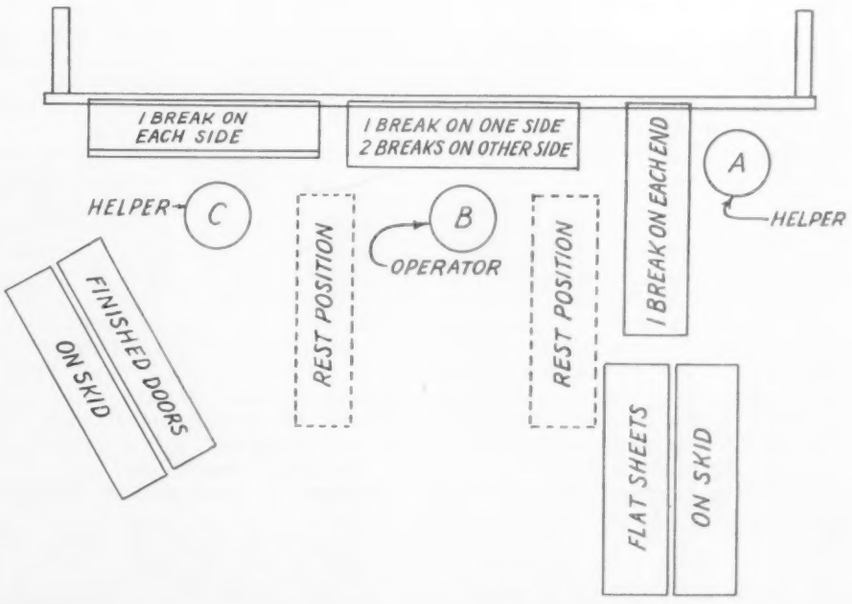


Fig. 1—Layout of equipment and operating positions in forming Durabilt steel locker doors

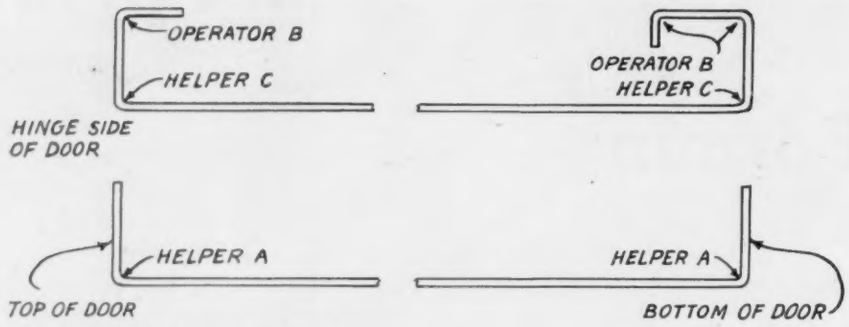


Fig. 2—Sectional views of locker doors showing the bends made by each of the three men referred to in the text

doors so changes are quickly made by loosening the gooseneck tool and taking out or adding a section to the tool and changing the stop at one end. The reinforcement formed is standard on all Durabilt lockers.

Two important savings are made by consolidating these operations. First all forming operations are made on a single press and in only a little more time than if a single operation was performed. This reduces press time by about 60 per cent. Also, the entire door is formed with four handling operations which includes removal from the truck and piling finished work. This compares with picking up and piling by each of the eight operators formerly required, 16 handling operations.

Dry-Ice Shrinks Bridge Bearings for Tight Fit

■ TO CARRY out the specifications of a contract, Wisconsin Bridge & Iron Co., Milwaukee, recently undertook the largest shrink fit job ever attempted in the Milwaukee district. It consisted of shrinking four bronze trunnion bearings with Dry-Ice for insertion in girders needed for the 180-foot long, double-leaf bascule bridge being fabricated for the Galveston Causeway. Bridge will weigh 600 tons.

Each of the bearings weighed a total of 7800 pounds. To obtain a tight fit of hub bearing in girder, each bearing was made 0.008-inch larger than the opening prepared for it in the girder.

No Alcohol Used

An unusual feature of this job was the fact that no alcohol was used to obtain complete immersion of the bearings. This reduced the costs materially but considerably increased the time necessary to obtain the required shrinkage.

A heavy insulated container was fabricated in the shops of the Wisconsin Bridge & Iron Co. Bearing was placed in the container and crushed dry ice packed in tightly around it. Entire container then was covered with a heavy tarpaulin. Alcohol painted on the fitting surface of the bearing prevented formation of frost and ice there.

Since the bearings were handled individually and on separate days, the first job was in the nature of an experiment and much more Dry-Ice was used than on the last. On the first shrink fit, the trunnion bearing was packed with 3865 pounds of crushed Dry-Ice and allowed to remain packed in this manner for a cooling period of 16 hours.

Examination at end of this period showed that not only had the required shrinkage taken place but that a considerable quantity of Dry-Ice remained. Bearing was lifted from the container with a traveling crane and eased into the opening prepared in the girder. Actual shrinkage was approximately 1/32 of an inch on the 39-inch diameter of the bearing. An hour later when the bearing had expanded to its normal size through contact with the air, it was wedged so tightly that it would be impossible to force it out, according to company engineers.

More Dry-Ice remained in the chamber after cooling than was required to assure a good margin of safety and complete assurance that sufficiently low temperature would be obtained, so the second shrinking was attempted with only 2785 pounds of Dry-Ice. The third employed 2600 pounds and the last was accomplished with only 2000 pounds.

The large amount first used was employed to prevent any possible difficulty in assembling the bearing and to allow a margin of safety. Careful planning of the entire operation was most essential because it is practically impossible to correct defective bearing placements made by this method. Had the bearing been allowed to seat improperly for even an instant, the rapid expansion would have made it almost impossible to remove it from the housing. As there was a penalty clause in the contract, completion of the work satisfactorily at the first attempt was imperative.

New Use of Dry-Ice

Use of Dry-Ice to contract shafts and bearings for bridge work to secure tight shrink fits has only recently come into use and follows establishment of more exacting engineering requirements in erection of these structures. Formerly diameters were similar and bearings merely forced in place.

Exceptional precautions were taken to prevent injury to the special crew doing this work. Heavy shoes and rubberized gloves were required so no one would freeze an extremity. In addition, heavy cardboard was laid where men walked near the container as a foot can be frozen almost instantly after the cold ice penetrates the soles of shoes.

Dry-Ice, totaling 11,250 pounds, was furnished for this job by Milwaukee branch of Air Reduction Sales Co.

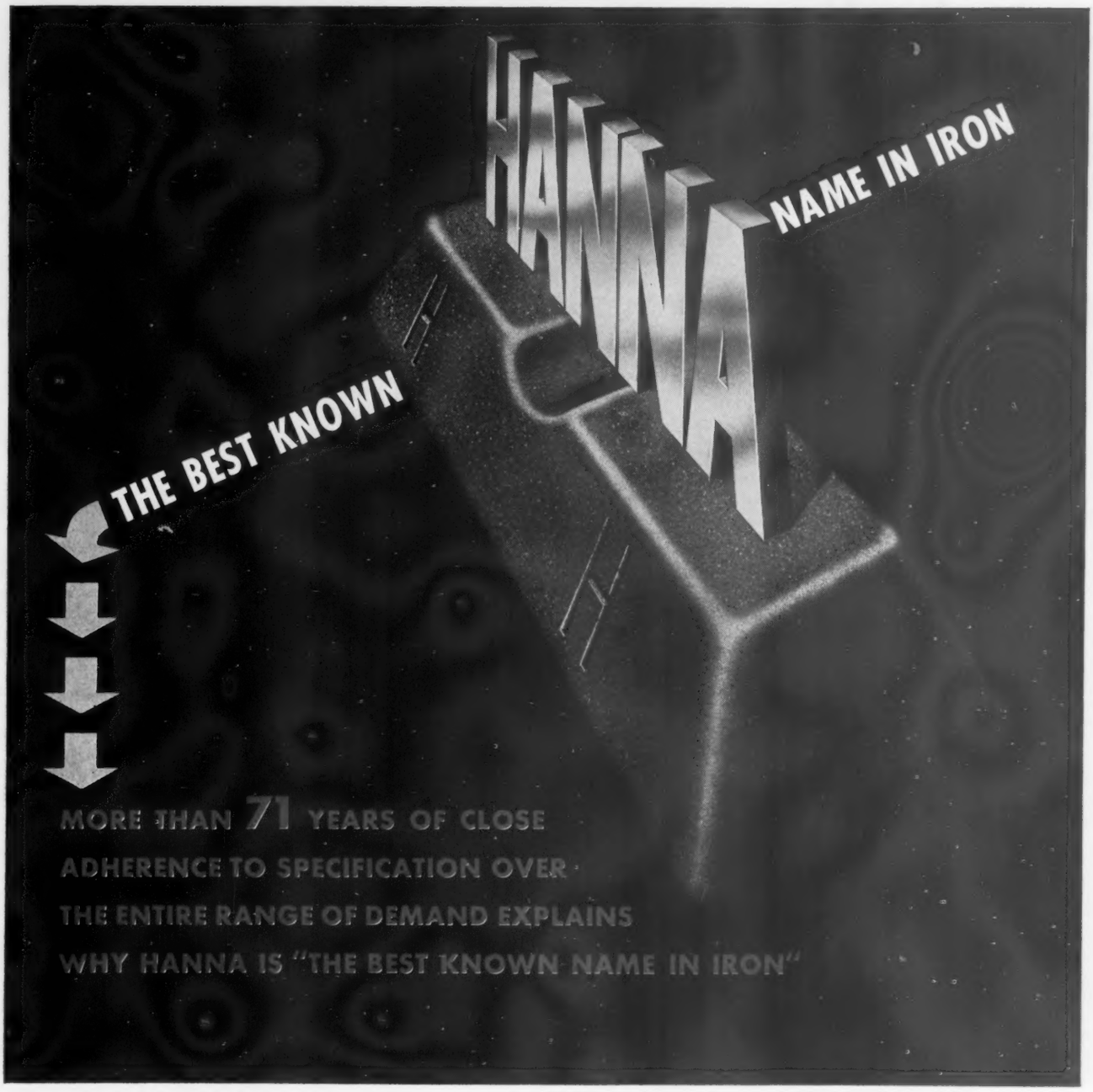
Institute Directory of Steelworks, 1938, Issued

■ *Iron and Steel Works Directory of the United States and Canada*, published by American Iron and Steel institute, New York; supplied by STEEL, Cleveland, for $10; in Europe by Penton Publishing Co. Ltd., Caxton House, Westminster, London, S.W.1.

Physical equipment and productive capacities of all known corporations and firms in the iron and steel industry in the United States and Canada are described in this 1938 edition, bringing up to date the information in the previous edition, published in 1935.

The main section comprises an alphabetical list of concerns in the industry, with as full details as possible relative to their equipment and capacity. Supplementary lists show for each of the major classes of iron and steel products the name and reported capacity of each producer.

An innovation is inclusion of tables showing distribution of capacities for pig iron, ingots and rolled products by states and by principal producing centers in those states.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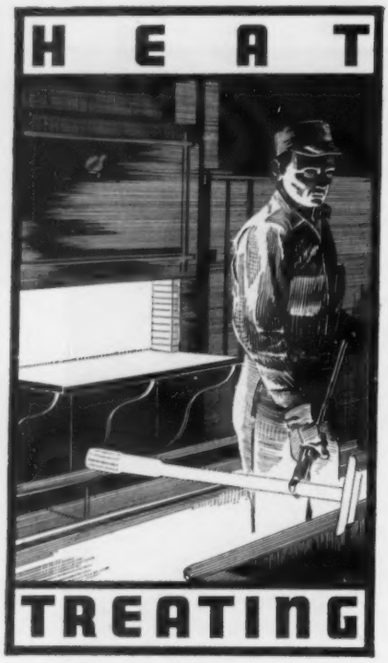


Piston Rings

Are heat treated to produce a thin black magnetic oxide surface which serves as a polishing agent and prevents cylinder scuffing and scoring. Other applications seen

■ ONE of the principal problems which has confronted the manufacturer of piston rings has been scuffing of the ring and cylinder surfaces. This problem has become more acute since engines are being built to develop more horsepower per cubic inch displacement than ever before. Cylinder pressures are greater and, therefore, the pressure per square inch exerted by the ring against the cylinder wall is greater. When springs are used behind piston rings, the problem becomes even more acute because the springs exert additional pressure.

Ring pressure sufficient to stop oil pumping commonly causes a raw iron ring to scratch and scuff the mirror-like surface of the cylinder wall, and, when rings scuff, they not only wear out at a rapid rate, but also wear the cylinder walls. Blow-by passes the piston rings and burns the lubricant off the entire assembly which adds to the destruction. Oil passes the piston rings in going from the crankcase to the combustion chamber and is burned into carbon.

Higher pressure piston rings may be the cure for excessive oil consumption, but a cure often breeds a condition worse than the original disease. It appears to be a vicious cycle, as almost any manufacturer of rings will attest.

In an effort to reduce ring wear and scuffing, the Perfect Circle Co., Hagerstown, Ind., a large manufacturer of piston rings, recently developed a new process which, it is claimed, results in its rings actually improving cylinder walls. The process produces what the company calls a "Ferrox Surface."

This surface in simple language is a surface, once raw iron, that has been converted by a heat treating process into black magnetic oxide for a depth of approximately 0.0005-inch. This surface acts as a polishing agent against the cylinder wall and burnishes both the rings and cylinder walls to a glass-like smoothness.

The result is that the Perfect Circle Co. is able to apply to its rings a greater pressure than ever before considered feasible and at the same time to eliminate the scratching and scuffing of the surfaces of the rings and cylinders. When scuffing is eliminated, wear is reduced to a minimum. Repeated tests, it is stated, have demonstrated that Ferroxed surfaces wear from 40 to 91 per cent slower, even when 50 per cent greater pressures are applied against them.

Some rather interesting tests have been made at the company's laboratories to demonstrate the superiority of Ferroxed rings over raw iron rings. One test has involved use of

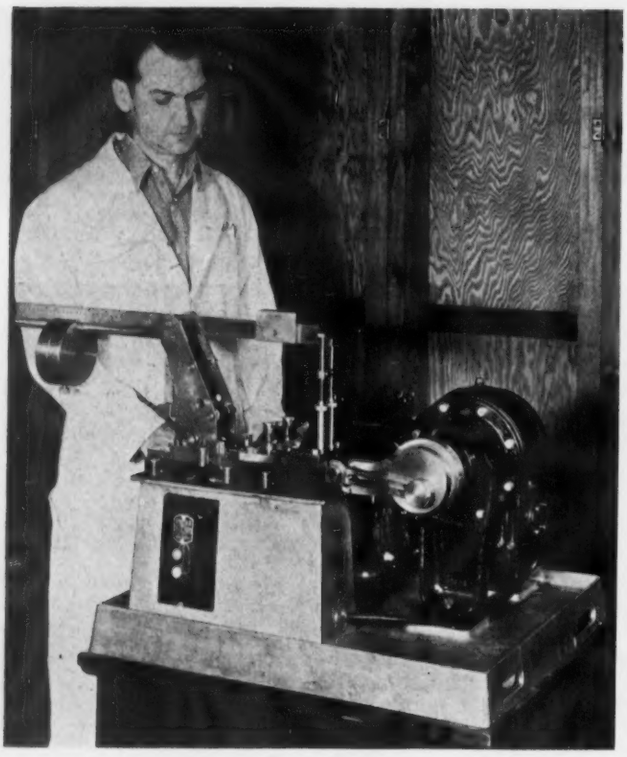


Fig. 1—Specially-designed machine which is used to measure the relative wear of raw piston ring iron and Ferrox surfaced ring iron on cylinder wall material

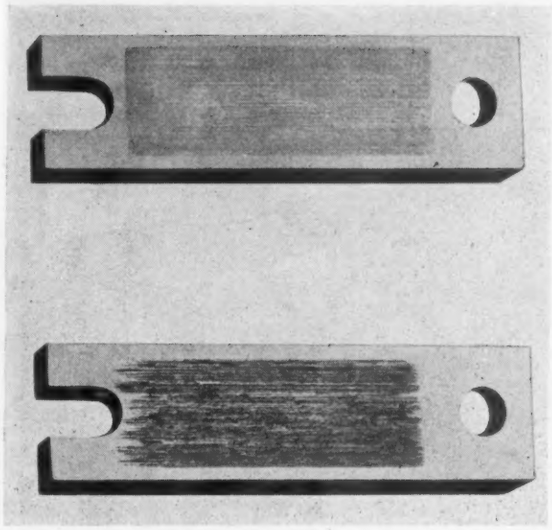


Fig. 2—The cylinder wall specimen above shows the smooth finish imparted by contact with Ferroxed piston ring iron; the specimen below, the scuffed surface produced by contact with raw ring iron

a specially-designed wear machine to demonstrate the relative wear caused by different ring materials. This machine is shown in Fig. 1. In this test, two specimens of conventional cylinder material are mounted on a reciprocating carriage. Ring specimens, one raw iron and another with Ferrox surface, are placed in an equalizing fixture above the reciprocating carriage so that the ring samples contact the cylinder material.

The two pieces of cylinder material are then moved in contact with the ring specimens at a constant speed, and under a load of 2500 pounds per square inch. This loading is many times the normal operating pressure. Under such severe conditions, it requires only a minute or two to scuff the surface of both the raw ring and cylinder material which contact each other.

The sample of conventional cylinder material, at the bottom in Fig. 2, shows the discoloring that results when it was subjected to the wear of a specimen of raw cast iron in the wear machine. Close examination reveals that the metal-to-metal contact causes coarse fragments of metal to break loose and to act as a harsh abrasive, the result being a scoring of the cylinder specimen. Breakdown occurs after less than 2 minutes at the speed and pressure employed.

Exerts Polishing Action

The piece of cylinder material, shown at the top in Fig. 2, was subjected to the section of a piece of cast iron that had been Ferrox surfaced. It reveals the mirror-like polish that results when Ferrox surfaced rings are used. The pressure, speed and time were identical with those for the raw cast iron test. The iron given the Ferrox surface acted as a fine polishing agent to impart a smooth finish to the cylinder metal without scuffing.

It is stated by the company that the Ferrox surface seems to have an application to any iron-bearing surface. Considerable experimental work has been done in connection with valve guides, tappets, pistons, thrust washers, and the like, with most favorable results. At the present time, several companies have obtained licenses from the company to use the process.

Metallurgists of the Perfect Circle Co., it would appear, have discovered an answer to the problem of metal-to-metal friction through application of their new treatment. At any rate, they have put friction, the piston ring's worst enemy, to work for them, and have improved the performance and quality of their product.

Finds Flaws in Steel Strip While in Rapid Motion

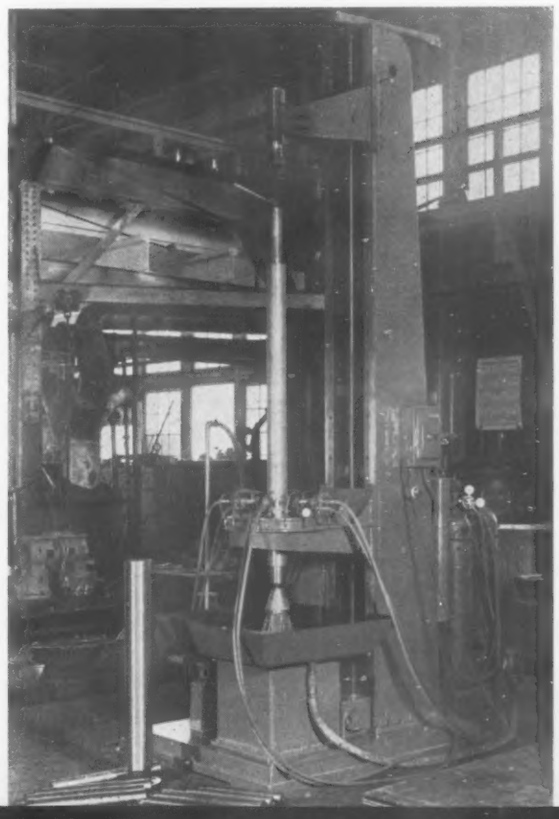
■ Recently a complete installation of General Electric Co.'s new "pinhole detector" was put into operation at Bethlehem Steel Co.'s plant at Sparrows Point, Md. The new device consists of a series of light sources mounted on one side of the continuous steel strip with phototubes on the other side. Presence of the most minute pinholes permits sufficient light to fall upon the phototubes to actuate the apparatus.

At this particular installation, the strip passes through the slotted scanner head of the detector just before it enters the leveller rolls. The 36-inch wide strip coming off the uncoiler passes through the trimmer at speeds up to 900 feet per minute.

Pinholes in the strip actuate the detector mechanism which in turn causes a diverter mechanism to drop the faulty sections out of the production line. After passing through the scanning head, strip continues through leveller rolls and shear before arriving at the diverter. To take this into account in operating the diverter and to provide for various speeds used on the line, an ingenious, self-adjusting timing device is used to assure proper diversion of the faulty sheets. In actual operation, sheets are not dropped out of the line until they have progressed through the leveling and shearing operations, a distance of about 10 feet.

Applies Flame-Hardening to Pump Parts

■ To increase durability of pump shafts and plungers, Goulds Pumps Inc., Seneca Falls, N. Y., developed the flame - hardening machine shown here, an all - steel, welded unit consisting of a revolving center to rotate work, a torch carriage and a main column. A uniform close-grained hard outer shell is formed as deep as ⅛-inch, and hardness of 90 to 100 scleroscope has been obtained on 0.50 point carbon steel



Ungrammatical—maybe.
Accurate—absolutely!

Every lick this big baby does is *double-duty*—she handles two FOUR-TON coils of narrow strip at a clip.

Big, but gentle. There is plenty of storage battery power back of that job to make certain that no harm comes to the stock as it is moved speedily and easily over the hauls necessary to fabrication and shipping.

A steel storage battery guards against its steel cargo being delayed at any point, guards against production time loss, hence protects production profits. This steel battery is an Edison, of course! Designed by Thomas A. Edison, himself, for unfailing heavy-duty performance, this battery has proved itself the most economical power source as well as the most reliable. It is the preferred power source for industrial truck service in the steel industry.

There has been a new Edison sound motion picture released this month. In it, you will see smart new steel handling ideas. A showing of this film will be arranged by any of our district offices at your convenience.

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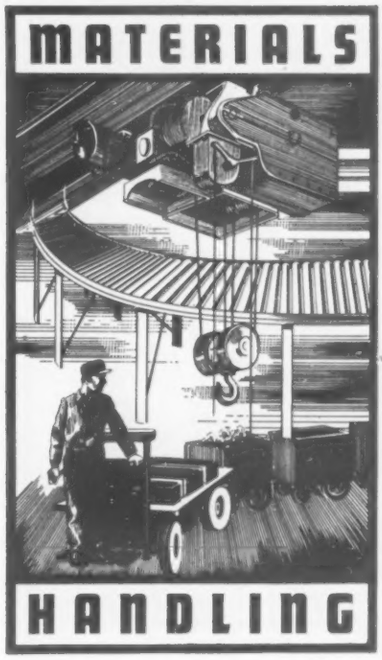


Adds New Plant

Model truck engine works obtains efficient materials handling by locating all assembly and feeder lines on one floor. Two main lines build 10 sizes and 12 models of engines

■ INTERNATIONAL Harvester Co.'s new Indianapolis truck engine works, now getting into production, provides an illuminating study in latest developments in plant construction and production layout.

Indianapolis was chosen because of its excellent transportation facilities and because it is near the company's plant at Fort Wayne, Ind., where heavy-duty Internationals are built, and to its plant at Springfield, O., where the light-duty models are produced.

The Indianapolis plant includes 363,000 square feet of floor area for manufacturing and 260,000 square feet in the foundry. Both these buildings are one-story steel-skeleton type with brick and glass side walls. Corrugated glass is used in side walls and continuous roof sash, affording excellent natural lighting. Both buildings have a concrete floor slab, with that of the manufacturing building covered by creosoted wood block.

Two thousand 350-watt Cooper-Hewitt mercury lights in the manufacturing building alone enable night-shift employes to work under the same desirable lighting conditions as the day shifts.

While the present plant has a capacity production of 680 truck engines per day, the whole has been designed and laid out to facilitate ready expansion in buildings and equipment toward an ultimate potential daily capacity of 2000 engines.

The present new foundry structure, in which equipment is being installed, was built for production of 300 tons of castings per day but was planned so additions will bring daily capacity up to 800 tons.

It was found that costs are substantially reduced by having all departments on one floor, as this saves the time otherwise lost in waiting for elevators and also saves space amounting to approximately one-

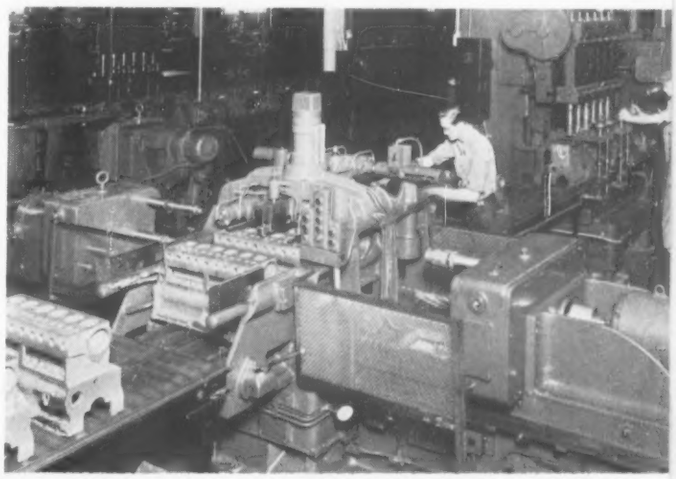


Fig. 1 (Right)—Special double - end machine drills and bores both ends of cylinder block including oil gallery hole. Fig. 2 (Lower left) — Rise-and-fall machine mills both sides of crankshaft bearing and lock slot in cylinder block. Fig. 3 (Lower right)—Automatic units drill and tap all miscellaneous holes in blocks

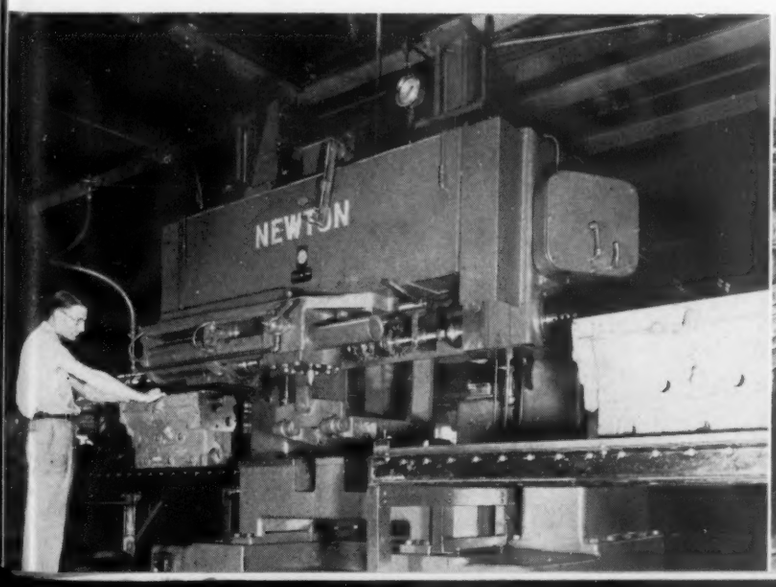


Fig. 4—Carriers permit turning and locking in any of eight positions during engine assembly

third of the floor area in a multiple-story structure.

The manufacturing building, Fig. 7, is 825 feet long and 440 feet wide, including a 33 foot wide receiving and shipping dock that runs the full width of the building on one end. In laying out the floor plan and conveyor system for this unit the objective was to attain utmost efficiency in manufacturing two distinct lines of engines in 10 sizes and 12 models for the International line of trucks that includes 30 basic models in 99 wheelbases.

To build the two basic types of engines and their numerous modifications, it was found necessary to install two parallel engine assembly lines. These lines, with a 20-foot aisle between them, extend more than half the length of the building on one side. All parts-production lines are laid out at right angles to these two main assembly lines and are arranged so they intersect the subassembly lines at the nearest possible locations to the stations where the particular subassembly joins one of the main assemblies. Sequence of the parts-production lines is: Cylinder block, camshaft, crankshaft, piston, connecting rod, flywheel housing, flywheel, cylinder head. The miscellaneous department is situated immediately beyond the cylinder head line. The fact that all fabrication could be placed on one floor made it possible to thus simplify the floor layout for handling a complexity of manufacturing operations.

All rough stock and parts are delivered through the manufacturing building directly to the points where they are needed, few pieces over touching the floor. More than three miles of conveyors in the manufacturing building, divided about equally between the roller type and the trolley type, reduce trucking of stock and parts to a minimum.

Several standard types of materials handling systems are in use in the manufacturing building, including a total of 8200 lineal feet of roller conveyors for handling materials in process. This eliminates lifting of heavy materials and facilitates the smooth flow of production. In some instances parts are placed in tote pans or on pallets but wherever possible the part is placed directly on the rollers to obviate the handling of containers.

Six separate trolley conveyor systems in the manufacturing building total over 8000 lineal feet and carry 3000 hooks. The longest trolley conveyor, that for delivering materials from the stores department through the manufacturing building, extends for a little less than half a mile. This conveyor is equipped with several different types of hooks spaced at 2-foot intervals. Flat trays suspended from the conveyor take care of all cartons and boxes that are easily loaded and unloaded. The conveyor is driven at variable speeds of 16 to 48 feet per minute and will make from two to six round trips per 8-hour shift. Based on the plant's present maximum capacity of 680 engines daily, this stock conveyor will deliver approximately 75 tons of material daily to the two assembly lines.

All trolley conveyors are installed sufficiently high to clear the aisles and machine lines, dipping wherever necessary for loading or unloading. Except at loading and unloading stations, metal guards run underneath the path of all trolley conveyors.

Tramrail Systems Installed

Thirty Cleveland tramrail systems, including both the monorail and crane type, also have been installed. Electrically and manually operated hoists are used in connection with the tramrail systems, depending on the nature of the load being handled.

Valve-in-head type engines are assembled in trunnion fixtures, held in a yoke suspended from a trolley conveyor. The smaller or L-head type engines are partly assembled on pallets moved on a roller conveyor, and at about the middle of the line are transferred to horizontal indexing pallets mounted on a power-driven conveyor for completion.

Complete engines are transferred from the ends of their assembly lines to a trolley conveyor which carries them to the engine test room. After testing, the engines are hung back on the same conveyor to proceed through the paint spray booth and out onto the loading dock for shipment by rail or truck. This dock will accommodate 9 railway cars and 20 highway trucks at one time.

Materials received on the loading dock are checked and transported into the receiving department. In addition to the customary checking, purchased items pass through a rigid receiving inspection. Materials in this department are either

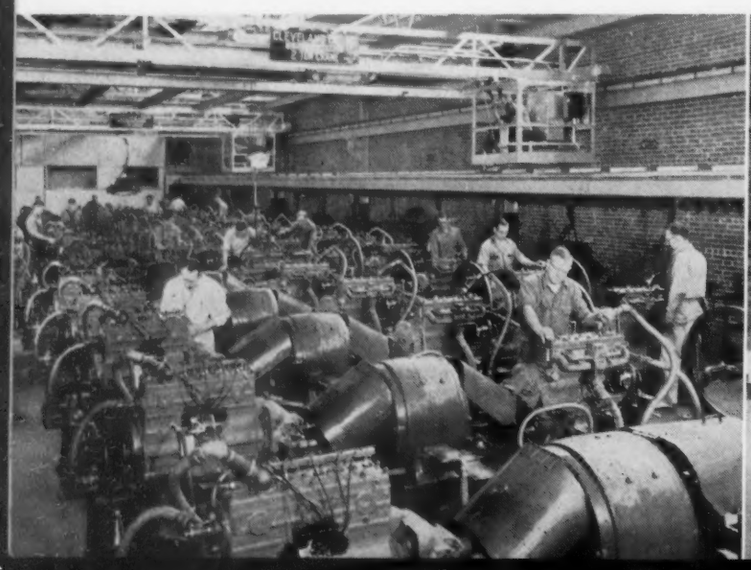


Fig. 5—Engines to be tested arrive and depart on trolley conveyor along right wall. Cranes spot them on test stands

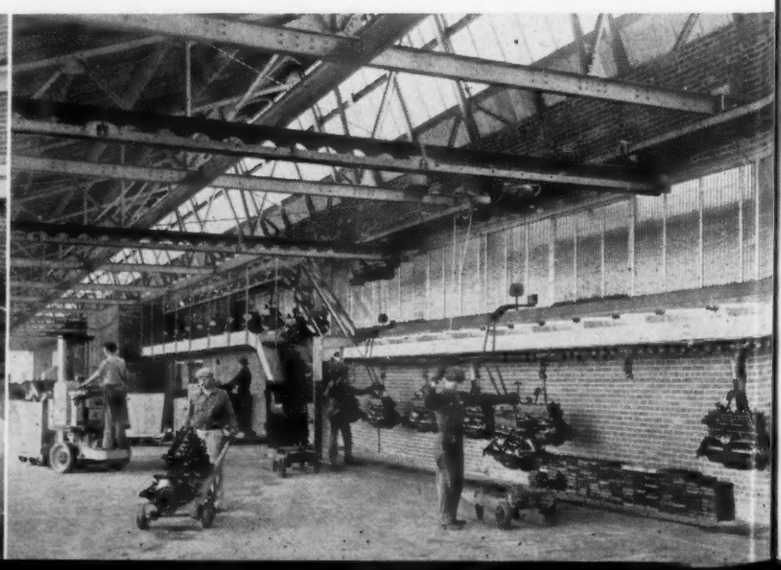


Fig.6 —C-type lifter removes finished engines from trolley conveyor at end of their journey through plant. Lifters operate on tramrail bridges over loading platform

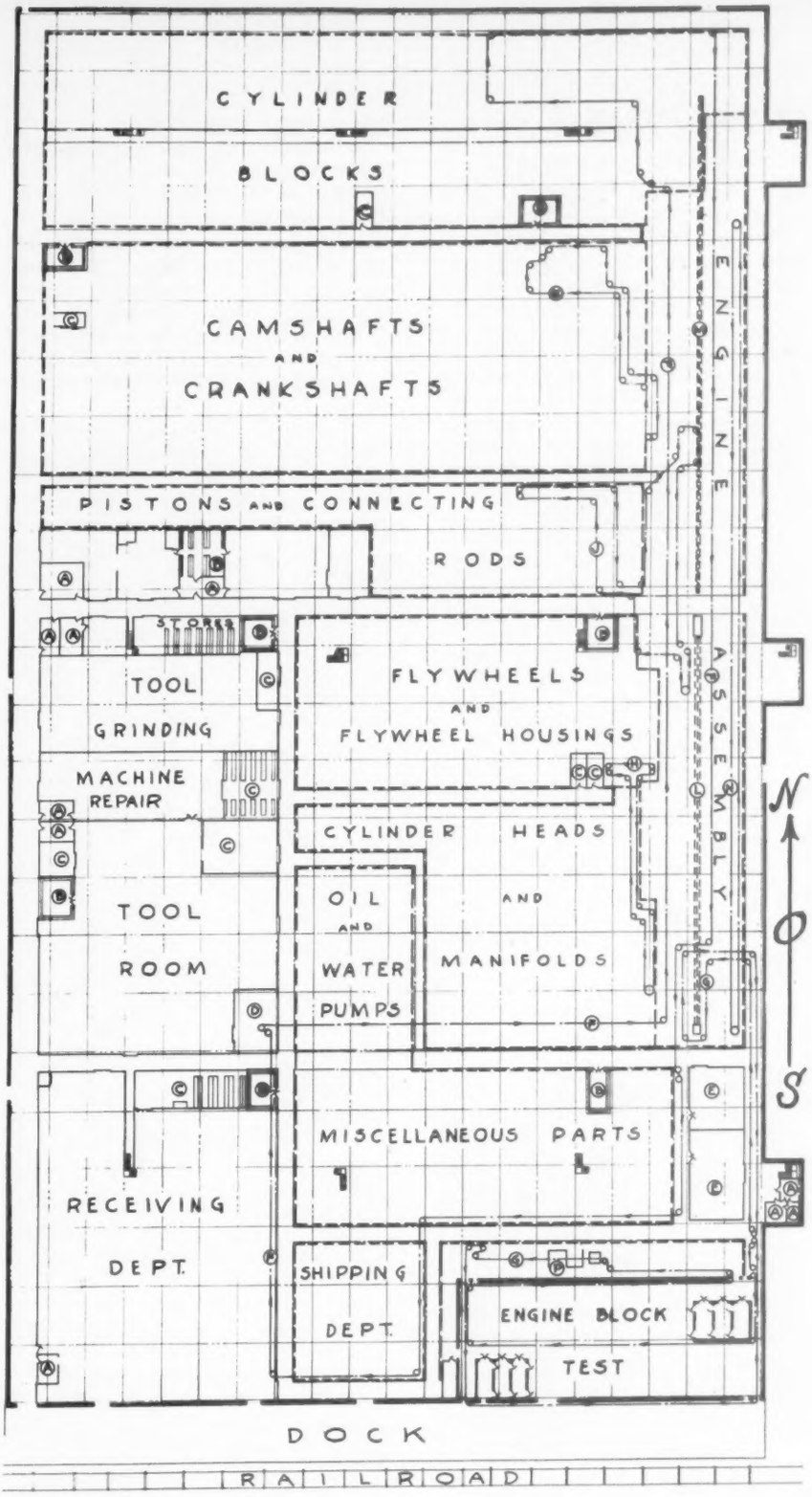


Fig. 7—Production layout: A shop offices, B tool crib, C miscellaneous cribs, D tool room heat treat, E inspection salvage, F conveying finished parts to assembly, G motor test conveyor, H cylinder head and manifold conveyor, J piston rod conveyor, K camshaft conveyor, L light motor-power assembly conveyor, M light motor-gravity assembly conveyor, N heavy motor assembly conveyor, P paint spray booth

placed in stores from which they are requisitioned in accordance with production requirements or are placed on conveyors to be transported to various departments.

All handling equipment has been designed with full consideration for keeping materials clean and avoiding scratches or marking of machined surfaces. In the course of their routes, the conveyors carry all major parts through one or more of the plant's nine latest-type Blakeslee washing machines.

The first production line makes cylinder blocks. It runs across front end of the building. A Newton heavy duty, drum type mill is used for rough and finish milling of the top, bottom and ends of the cylinder block. Fixture of this mill holds five blocks at one time. A special Cincinnati hydraulic horizontal broach finishes the main bearing cap seats and semifinishes the main bearing shell half holes.

Main bearing shell half holes are bored on a Barnes precision boring machine, Fig. 1, after the bearing caps are assembled to the cylinder block. Camshaft bearing bores are also handled on this machine at the same time the crankshaft bearing bores are finished. Entire cycle of this machine is automatic and is electrically interlocked to prevent misoperation.

Unusual Milling Operation

Another unusual operation on this line is straddle milling sides of main bearings and cutting of lock slots. This is performed on a C-74-A Newton rise-and-fall type milling machine, Fig. 2, which elevates the work to the cutter, automatically clamps it for the cutting, then returns it to its original position after the operation has been performed.

Perhaps most striking of machine operations on cylinder block line are those performed by two new Barnes 3-station drilling and tapping machines, Fig. 3, which are fully automatic with push button control. Cylinder block indexes to position and raises the clamp at which time the drilling or tapping units start with quick approach, feed and automatic return to neutral position. Block then is automatically lowered and indexed to the next station. Machine delivers a block on the conveyor with 29 holes drilled and 17 holes tapped each time it indexes.

A variety of operations are performed along the cylinder block line by horizontal duplex way-drilling and tapping machines of the one to six-station type with conveyor-through-tunnel fixtures with automatic indexing and clamping. Cylinders are finish bored to close tolerances on a Barnes inclined-way precision boring machine. Following this operation the cylinders are honed.

Other lines are set up with the latest and most advanced machine tools for producing the valve guide, bearing cap, camshaft, crankshaft, piston, connecting rod and flywheel housing. These parts are produced and fed into the engine assembly line at the point needed. The arrangement and location of some of these departments is shown in Fig. 7.

Assembly line for L-head engines, used in the light-duty line of trucks, was favored in making the layout since it is the high production line

(Please turn to Page 67)

Stainless Washers

(*Concluded from Page* 46)

they would grind approximately one million pounds of coffee an hour.

Housings for these mills are made from a molded plastic and also from sheet steel. The steel cases are fabricated entirely by welding, employing the fixture shown in Fig. 6. The case being assembled here consists of four main parts. In the position shown, the backside and the two ends are made from one piece of steel sheet, stamped and formed to shape. Two small sections then are inserted at the front side and the main front plate placed in position over these. Completed assembly is shown in Fig. 7 with all pieces clamped in position in the welding fixture.

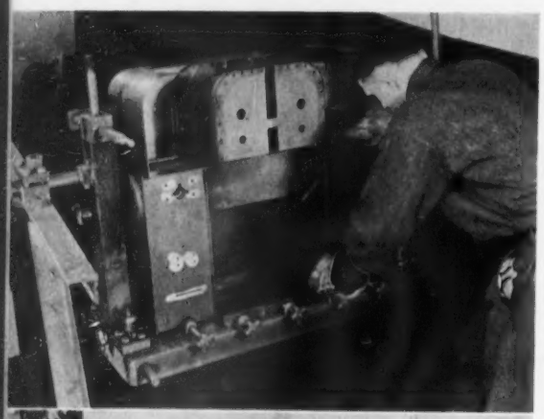
In Fig. 6 the heavy top clamp has not been placed in position. In Fig. 7 it is shown clamping the upper curved portions of the two side members tightly against the main front member for welding. In Fig. 7 the main front welds have been completed at these upper curved joints.

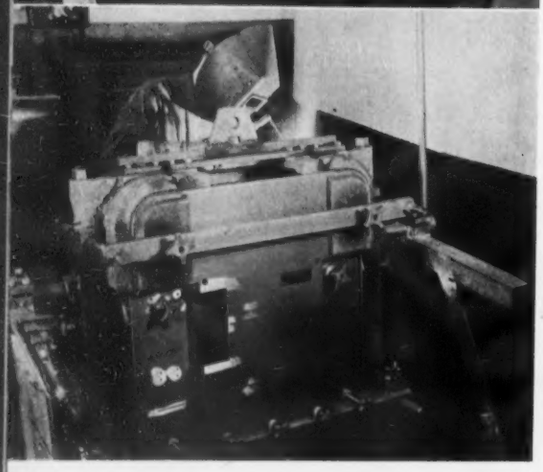
Here again, since sheet metal of rather thin section is employed, heavy backup plates are incorporated in the welding fixture to minimize distortion by keeping the sheets cool and conducting heat away from the welded joints rapidly.

As will be noted in Fig. 6 provision is made for collapsing the interior part of the fixture to permit removal of the completely welded assembly. Holes already punched in the small front side sections are utilized in clamping these pieces in the fixture, as will be seen by reference to Figs. 6 and 7.

Due to type of joint employed, these parts also are cut and formed to very close limits minimizing amount of metal that it is necessary to remove in finishing the welds.

Fig. 6 (Top)—Jig for welding coffee mill housings of complicated design. Fig. 7 (Bottom)—Coffee mill housing jig with all pieces clamped in place for welding





Solves Lock Lubrication Problem with Graphite

■ A simple, low-cost, solution to the problem of providing long-life lubrication for small mechanical devices, such as locks, has been developed recently. Involved in the problem were a number of requirements: Lubricant must "stay put" and not drain or rub off; it must be unaffected by temperature and weather variations; it must provide corrosion resistance; and it must not act as a collector for dirt.

In practice, the treatment involves dipping such parts as pins and shells of locks in a dilute suspension of finely divided "dag" colloidal graphite in water. As the water evaporates, it leaves a thin, dry graphite film which provides a practical and efficient method of lubrication over a long period of time.

The graphite particles in this surface coating are so minute they are not scraped off in service, but rather are imbedded in the surface of the metal parts treated, creating a so-called graphoid surface. The small size of the particles may be appreciated from the fact that such a "solution" of colloidal graphite will pass right through filter paper—graphite and all. Actually, of course, the graphite is not in solution but is merely suspended in the water.

Prior to dipping the parts in the colloidal graphite suspension, it has been found useful to flush them with water-diluted ammonia and then spray them with live steam. This treatment has the double effect of cleaning the surface for ready adhesion of the colloidal graphite film and of raising the temperature of the parts to assist in rapid evaporation of the water in which the colloidal graphite is suspended.

According to Acheson Colloids Corp., Port Huron, Mich., a number of lock manufacturers are already using the process in production.

In addition to locks, the idea of dry lubrication should be applicable also to such mechanical devices as fire alarm systems, telephone exchange equipment, news and financial tickers, fans, small motors, clocks, and variable radio parts, etc. In some cases the "solution" may be made in oil instead of water in which case the graphite in its finely divided form has the apparent advantage of retaining the oil on the friction surface.

Time and Motion Study For Practical Users

■ *Applied Time and Motion Study*, by Walter G. Holmes; cloth, 347 pages, 5¾ x 8½ inches, 39 illustrations; published by the Ronald Press Co., New York; supplied by STEEL, Cleveland, for $3.75; in Europe by Penton Publishing Co. Ltd., Caxton House, Westminster, London, S.W.1.

The author is a time study engineer at Detroit-Timken Axle Co., and knows the shop and its varied problems intimately. His experience includes efficiency analysis, tool and diemaking, production work and time and motion study for Buick and Chevrolet organizations.

The book includes a table of time values to four decimal places, body member movements, eyes, nerves and impulses; demonstrates means to recognize and to include rhythm in work; gives an operating analysis check list covering 1180 items; shows why time values cannot be satisfactorily obtained by analyzing motion pictures; contains new material on fatigue; uses 24 therbligs and clarifies terms and expressions.

Times for performing all elementary motions are based on more than 1000 observations each and have been tested by three years of shop work.

Develop New Method For Profile Study

■ Research engineers of the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., have made it possible to obtain a profile view of a surface without destroying the sample by sectioning it. The straight edge of a small strip of steel is placed against the surface. A beam of light is thrown on the surface and the shadow of the straight edge observed with a microscope. By proper selection of the angles of illumination and viewing, shape of observed shadow is made geometrically equivalent to shape of surface profile as shown in accompanying diagram.

Irregularities as small as 0.00005-inch in depth can be studied by this method, it is claimed.

WHEN YOU FIGURE YOUR LUBRICATION COSTS...

bring COMPARATIVE MAINTENANCE COSTS *into the picture*

then learn the real value of

GULF'S *higher quality* LUBRICANTS!

TRY this measuring stick on your lubrication costs: compare your maintenance costs from month to month and determine whether they are going up or down. If maintenance is high, ineffective lubrication may be the reason . . . and no matter how little you're paying for lubricants, your *real* lubrication costs may be too high!

After making a careful study of comparative maintenance costs, an official of a large operating company recently said: "Of course we are paying a few dollars more each month for Gulf's higher quality lubricants, but look at this reduction in maintenance costs! Our actual dollar savings amount to nearly ten times the total cost of the lubricants. At that rate we're getting our oils and greases for less than nothing . . . *and that's the lowest lubrication cost I ever heard of!*"

You may find it difficult to evaluate all the intangible factors that make up your final lubrication costs. But of this you may be sure: when you put Gulf's higher quality lubricants to work you have taken a forward step toward improving production, reducing waste, cutting maintenance expense and making over-all savings which will give you the lowest possible "lubrication costs."

Ask the Gulf representative who calls at your plant to discuss this matter in detail. He can help you get a true picture of your actual lubrication costs. Gulf Oil Corporation—Gulf Refining Company, Gulf Building, Pittsburgh, Pa.

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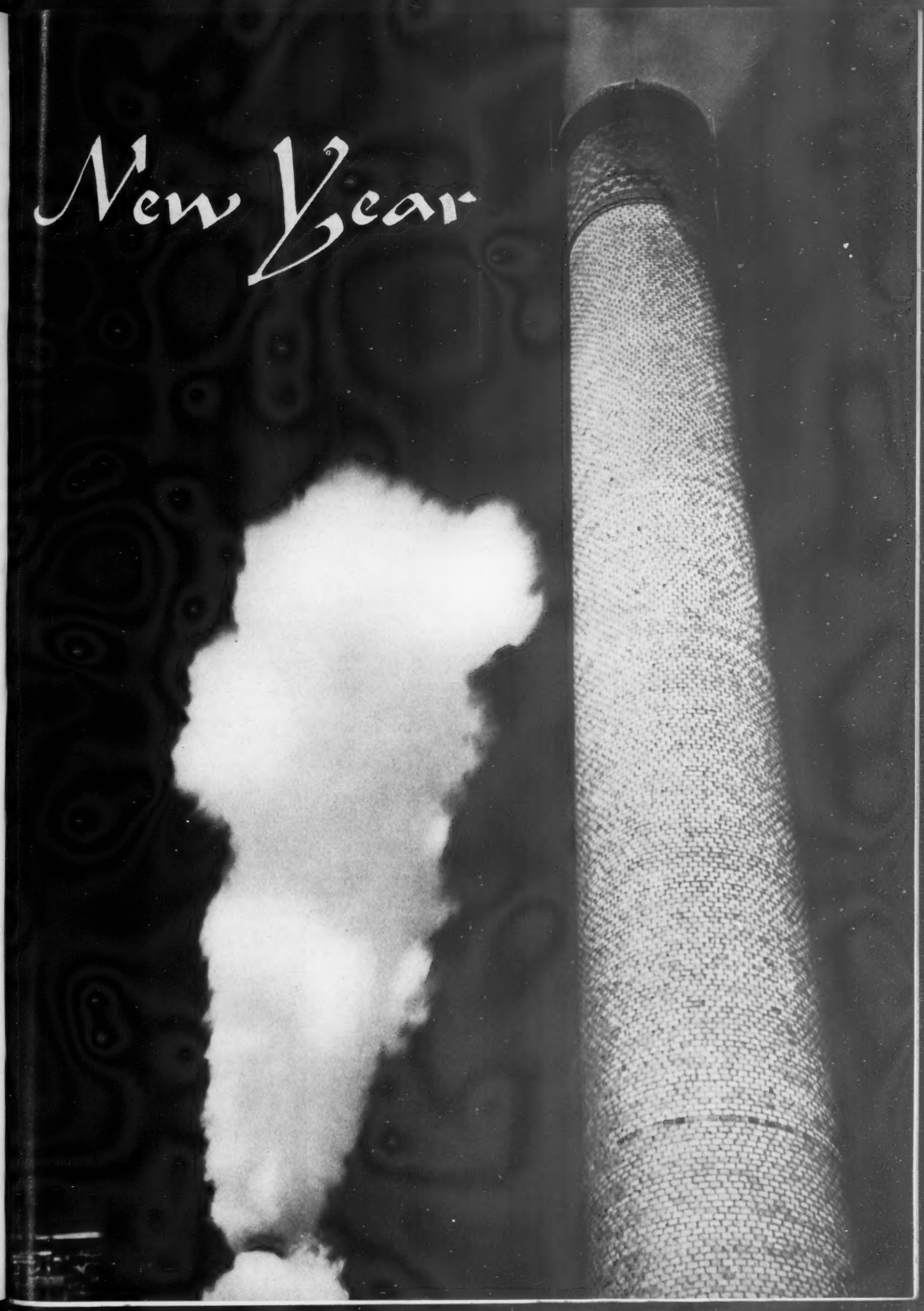
. . . and with the STEEL's 1939 Yearbook Issue

Midnight, December 31st, 1938—and the country's industry, with pent-up energy, will herald in another year—teeming with a wealth of unborn progress and benefactions to man . . . *Little* will the celebrating world know that the din of exhausting steam will likewise mark the completion of STEEL's 1939 Yearbook of Industry issue—and that its immediate distribution, carrying your advertising message to 68,000 business executives in the iron, steel and metal working industries, will greatly assist in determining their moves to unleash that progress—*progress throughout the full year.*

STEEL

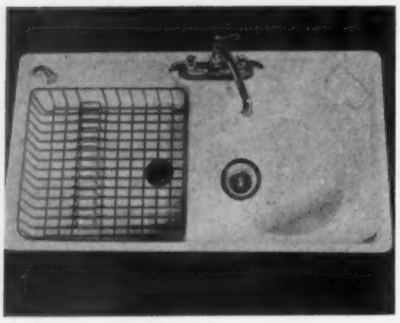
CLEVELAND


New Year

NEW METAL PRODUCTS

■ Announcement has been made by Ebco Mfg. Co., Columbus, O., of a flat-rim, two-compartment dishwashing sink, suitable for installation in any home or apartment cabinet top.

A chromium-finished, swing-spout mixing faucet is mounted on back

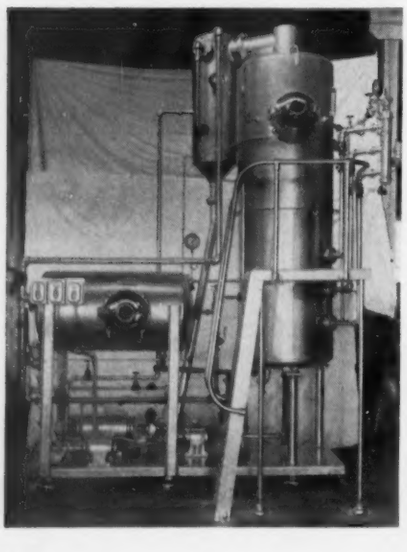


ledge of sink, which has in one corner an integral soap dish and in the other the spray fixture. This arrangement eliminates in-the-wall piping. Rim is absolutely level on all four sides, insuring a water-tight joint when sink is installed in a linoleum, tile, metal or composition cabinet top.

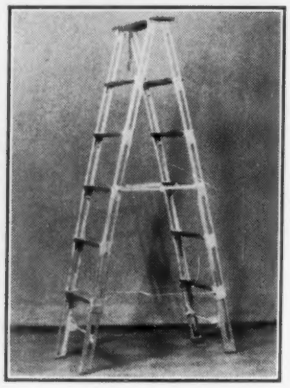
Sink is heavy cast iron, finished in acid-resisting porcelain enamel in a choice of colors. Overall size is 20 x 37 inches.

■ Extensive use of stainless steel is found in the construction of a new high temperature cream pasteurizer recently introduced by C. E. Rogers Co., Detroit. Its positive two-stage vacuum cooler, condensing pans, spray process driers, tanks, forewarmers and other special equipment are all stainless steel. Welded construction is employed.

Besides pasteurizing, other uses of this unit include manufacture of condensed buttermilk, sweetened and plain condensed milk, superheated condensed milk, ice cream mix or any product usually processed in a vacuum pan. Its capacity is 6000 pounds of cream per hour.



■ A steel 6-foot double ladder, made by E. H. Jarabek, 11 West Forty-second street, New York, can be transported easily in an ordinary



automobile; it takes up a space of only 21 x 17 x 5 inches when folded.

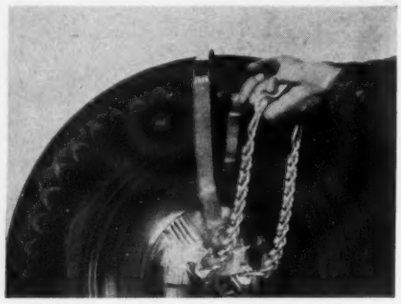
Unfolding operation of the ladder consists of one continuous upward drawing out movement, with automatic locking of steps. It is folded by pressing a foot pedal, which releases entire locking mechanism, permitting an automatic downward movement. Ladder weighs 28 pounds and is constructed to withstand all weather and working conditions.

■ Drawings and tracings are protected and kept flat in this steel filing cabinet, designed by Corry-

Jamestown Mfg. Corp., Corry, Pa. A hood at the rear and a lift compressor at the front of every drawer keep drawings in order and prevent their tearing, crumpling or curling.

Drawers may have from one to eight compartments. They operate smoothly on four oversize case-hardened rollers and are protected from accidental removal by gravity stops.

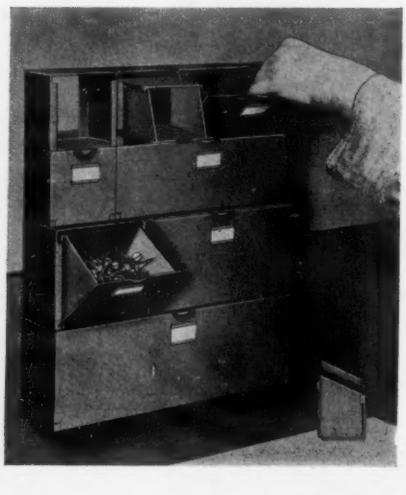
■ Much of the unpleasantness of attaching chains to automobile wheels is eliminated by this ingeni-



ous Pullthru emergency chain mounter, a product of Union Spring and Mfg. Co., New Kensington, Pa. Good quality heat-treated spring steel gives this tool the necessary strength and ruggedness to stand up under rough treatment.

■ A compact and efficient means for keeping track of screws, bolts, nuts, washers, rivets, staples, gaskets, shims and other small parts required in the manufacture, installation and servicing of mechanical equipment is provided by Add-A-Bin, steel cabinets made up of varied size bins which are welded 26-gage steel.

Introduced by Noggle Products Co., Ann Arbor, Mich., this system of unit bins is intended to be built up by each user to fit his individual needs. Bin housing may be screwed to a wall, bench or cupboard. When a bin is opened for the removal of an item, it closes automatically by the weight of its contents, or it will lock open if lifted slightly. It may be lifted higher and pulled out and down for cleaning.



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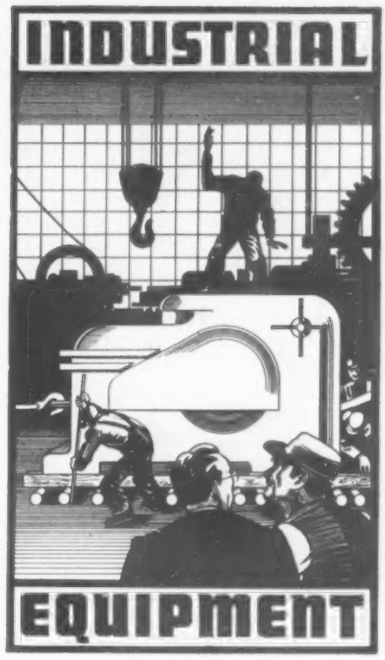
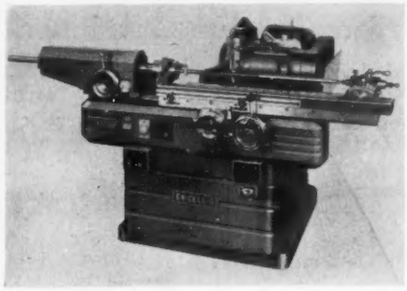


Specially Designed Unit Grinds Longer Threads

■ Ex-Cell-O Corp., 1202 Oakman boulevard, Detroit, has added to its line a larger capacity No. 31 thread grinder to facilitate production grinding of long threads on such



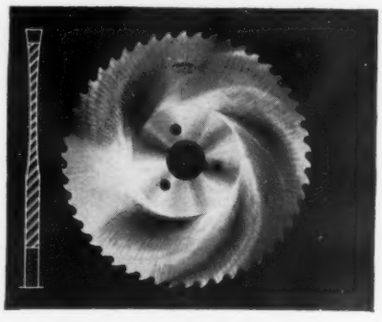
parts as aircraft landing gear strut tubes, machine tool feed and lead screws.

This model will grind threads up to 22 inches in length on work up to 36 inches long between centers. Straight threads can be ground on work up to 6 inches in diameter and tapered threads on work up to 5 inches in diameter. Grinder has a long master lead screw enclosed in a housing extending beyond left of the unit. Work carrying table is designed to feed to right of machine. Short lead screws may be used. Lead screw carrying spindle is supported at the table end in two precision bearings. Drive is from a two-speed motor through worm gearing.

Machine is designed to grind in both directions, if desired. Wheels can be dressed without slowing down. Grinder may be set either to stop or reverse automatically at end of each stroke. Independent controls start and stop both wheel head and coolant pump motor; select either fast or slow table movement; start or stop work table. Machine is available with backoff attachment.

Cup-Wheel Ground Saw Gives High Performance

■ E. C. Atkins & Co., 402 South Illinois street, Indianapolis, have introduced a new cup-wheel grind as



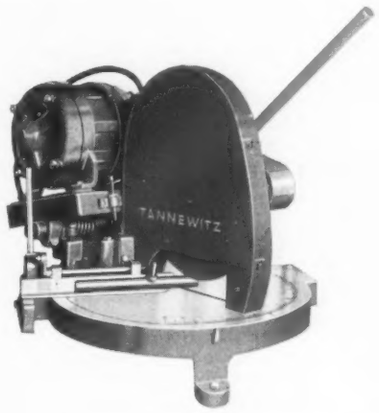
a feature of their circular saws. This design is said to prevent chips from backing up or freezing on teeth points at high speeds and rapid feeds.

The 8-inch metal milling or slitting saw, show in the accompanying illustration, sliced off a 1-15/16-inch ten-twenty cold roll bar in 13 seconds, according to manufacturer. Blade body remained cool during operation.

Free clearance back of the line of tooth contact is said to allow freer running and smoother cuts, without a tendency to burn material or heat the saw rim. This saw may be used to cut ferrous or nonferrous metals up to the hardness of cold roll or chromium-nickel and tool steel.

Metal Cutoff and Miter Machines Swivel to Cut

■ Tannewitz Works, Grand Rapids, Mich., introduced recently two dry abrasive cutoff and miter machines for bench use, featuring instantaneous ground finish metal cutting with a swiveling unit.



The type M machine is made with a circular ball bearing table to swivel and cut any angle from 45 degrees right to 45 degrees left. It has a 1-horsepower motor and swings a 10-inch diameter abrasive wheel or metal cutting saw. It cuts off and miters light tubing up to 1 inch x 16-gage, metal mouldings up to ¾-inch x ¾-inch x 16-gage, and ½-inch round rods.

Type M2 machine is considerably larger than type M, having a 2-horsepower motor, and swings a 14-inch cutting disk. This machine's capacity is 1½-inch x 16-gage tubing, 1-inch x 1-inch x 16-gage molding and ¾-inch round rods.

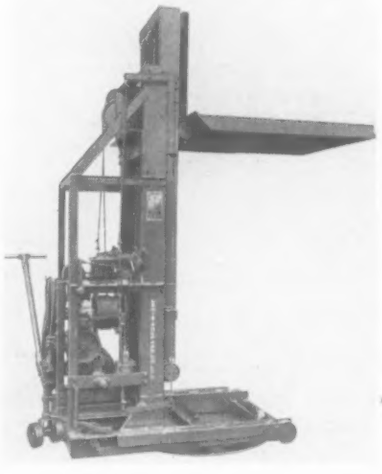
Adds Grounding Switch

■ Delta-Star Electric Co., 2400 block, Fulton street, Chicago, has added to its line a 265-kilovolt, 1200-ampere, main and grounding switch for use on high capacity systems. Switch is of the vertical break form. Each single pole unit has two rotating insulator stacks, one controlling the single piece tubular copper blade, the other turning the high pressure line type contacts. The main switch is of the MB-139 medium pressure wiping contact form.

Retractable Base Makes Stacker More Flexible

■ Lewis-Shepard Sales Corp., Watertown, Mass., has introduced a portable telescopic stacker with a retractable revolving base.

Construction of this elevator, which is known as PBRT, includes retractable travel wheels and a circular plate which supports four rotating wheels mounted in stationary position in the base. Unit may be moved along floor with its regu-

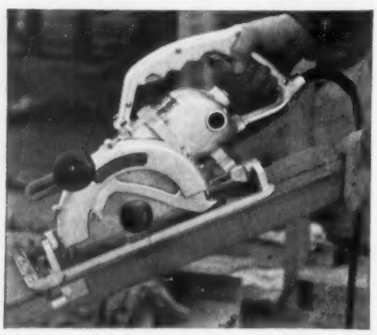


lar travel wheels to any given position. These wheels then are retracted to allow weight of stacker to be transferred to the plate, and the complete elevator can be rotated on the plate for a desired change in direction.

Stacker will lift a load of 1500 pounds. Platform may be lowered to within 8½ inches from the floor or raised to a height of 133 inches. Telescopic frame used in the vertical assembly measures 13 feet 7 inches overall, and when collapsed has an overall height of 8 feet 2½ inches. This feature enables stacker to be moved under low ceiling projections. Overall width of the unit is 42 inches, and platform measures 48 inches long by 42 inches wide.

Duplex Handle Makes Saw Easier to Handle

■ Stanley Electric Tool division, New Britain, Conn., has placed on the market a new heavy duty W8



safety saw which will cut straight through 2¾-inch lumber and will make bevel cuts up to 2 1/16 inches at 45 degrees.

Saw is compact and yet has sufficient power for continuous operation. Duplex handle makes saw easy to handle in any position. Switch can be operated independently by either of two triggers located on the handle.

Simple wing nut adjustment is provided for regulating depth of cut. Housing of the saw is heat-treated aluminum alloy. Gears are heavy duty ground heat-treated alloy steel worm and over-size bronze worm which runs in a large grease chamber. Saw is packed in metal carrying case with one combination rip and crosscut blade, ripping gage, wrench, lubricant and heavy rubber covered three-wire cable.

Bakelite Fuse Pullers Prevent Electric Shocks

■ Trico Fuse Mfg. Co., Fifth street, Milwaukee, has announced a line of laminated bakelite fuse pullers for pulling and replacing fuses, adjusting switch and cutout clips, and avoiding danger of shocks or burns where live electrical parts are being handled.

All metal parts are cadmium

plated. Puller has been tested at 35,000 volts dry and 4000 volts after 24 hours submersion in salt solution without moisture effects, either mechanically or electrically.

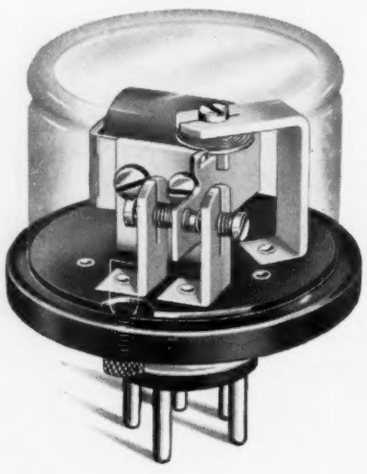
Puller is made in two sizes: No. 123 for fuses 0 to 200 amperes 250 volts, and 0 to 100 amperes 600 volts, and No. 125 for fuses 0 to 600 amperes 250 volts, and 61 to 400 amperes 600 volts. No. 123 has a handy screw and cap driver attachment.

Telephonically Applied Sound Actuates Relay

■ Sigma Instruments Inc., Belmont, Mass., has devised an audio frequency relay of such sensitivity that coupling to a speech circuit through a capacitor of as little as 0.02-microfarad provides ample power for its operation.

Response of this instrument to weak electrical impulses renders it useful as the pickup device for a remotely controlled circuit. It is adaptable also, by microphone connection, to alarm systems, counters and sound-actuated controls.

Relays are available in two types: AF-1, with adjustable magnetic

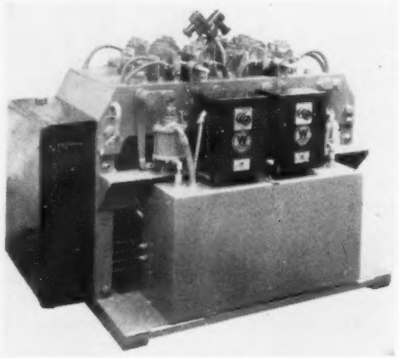


shunt for control of sensitivity; and AF-2, with variable hairspring for sensitivity adjustment. Sensitivity ranges are same for both types. Provided with a four-prong base, instrument may be mounted in a standard vacuum tube socket. It is contained in a metal case 2⅜ inches in diameter and 2¾ inches high, compact enough to fit in apparatus where space is at a premium.

Improved Heaters Have Water-Cooled Electrodes

■ American Car & Foundry Co., 30 Church street, New York, introduced recently a line of Berwick electric heaters, comprising seven models which differ principally in capacity and in the number of electrodes used.

Model illustrated, known as the No. 4 two-electrode type "LS" metal heater, is provided with low temperature electric eye for working down to 1100 degrees and up to 2300 degrees Fahr. It is equipped with air cylinders for giving any desired pressure on piece being heated. Electrodes are water-cooled. This



type of heater may be used on both steel and non-ferrous metals, for upset and drop forge work.

Range is from ¼-inch to 1½ inches in diameter, and practically any length heat can be obtained from 1 inch up to 23 inches.

Introduces Equipment For New Welding Process

■ General Electric Co., Schenectady, N. Y., has introduced equipment for use in a recently developed electronic resistance welding process intended to replace soldering operations in the manufacture of such items as radio sets, watches, small meters, industrial control devices, etc.

A current of several thousand amperes flows in the secondary circuit of welder for a half-cycle, timed by an Ignitron tube and its associated control circuit. Amount of heat is determined by duration of current flow; maximum heat is obtained with a current duration of slightly more than 1/120-second.

On other electrical devices, as

20% SAVED without changing operations

New Precision Castings successfully used in power press housing

Making no change other than switching to Birdsboro's precision castings, this manufacturer saved 20% on machining and finishing the illustrated power press housing and distinctly improved its appearance, all without detracting in any way from the good qualities of the casting. Here's how:

In the machine shop his records showed

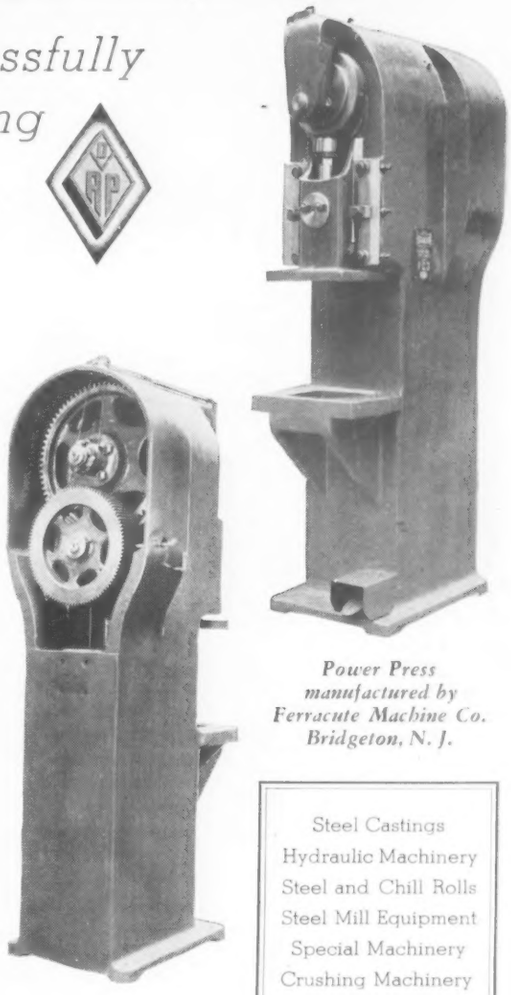
1. Faster machining
2. Lower tooling costs
3. Longer runs between tool sharpenings
4. Less metal removed

In the finishing department he eliminated

1. Cleaning
2. Grinding
3. Priming

Here's why: Birdsboro castings are made by an entirely new process—the Randupson Process of Precision Casting. Castings made by this process are free from sand inclusions, nailheads, brackets in corners, or internal and surface imperfections. They are absolutely true to pattern, have sharp, clean-cut definition and uniform, non-porous metal. All these factors contribute to the itemized savings above and all can mean equally definite savings to you.

What savings and where you can make them is the subject of our new illustrated folder, "The Randupson Process of Precision Casting." Fill in and mail the coupon below for prompt delivery of your copy. Naturally, there is no obligation.



Power Press manufactured by Ferracute Machine Co. Bridgeton, N. J.

Steel Castings
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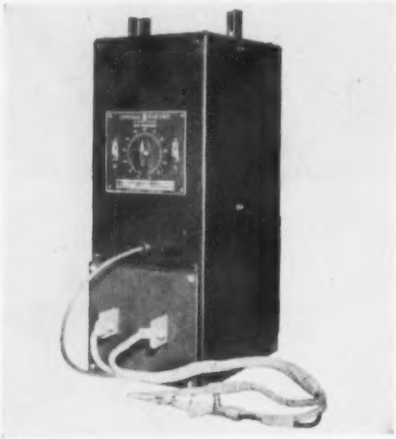
well as on radio sets, tongs are used with equipment in welding solid or stranded wires to terminals. A suit-

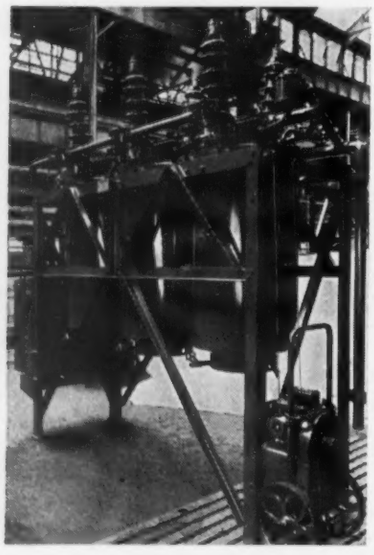


able bench welder can be utilized to weld small studs, 0.010 to 0.050-inch in diameter, to flat surfaces with little or no marking on opposite side of the sheet of metal. Similar equipment is suitable for spotwelding thin sheets of various alloys with little oxidation or discoloration.

Portable Lifter Raises Circuit Breaker Tanks

■ Westinghouse Electric & Mfg. Co., Pittsburgh, has added to its line a portable motor-operated lifter for raising and lowering tanks of outdoor oil circuit breakers.

This chore is lightened by application of a small motor and reduction gearing to a conventional lifter, ordinarily used as a manually operated device. Drums on which flexible cable is wound are operated by worm and gear of such pitch that lifter will hold load in any position. As tanks must be both raised and lowered, a reversible motor is used

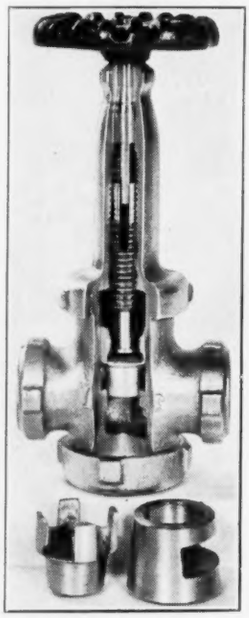


with a 2-position pushbutton switch. Power may be obtained by plugging into any convenient outlet.

An emergency hand operating crank is provided for use on occasions when service power supply is cut off. Handle is attached at the point where speed reduction begins. To put in position, lifter is wheeled up to breaker frame, two taper-end pins on lifter are entered into two corresponding holes in the frame, and unit is raised to vertical position and secured to breaker frame by bolts.

Construction of Valve Simplifies Maintenance

■ Monat Valve and Forge Co., 1021 Bessemer building, Pittsburgh, has placed on the market a packless T-globe valve, ranging in size from



½-inch to 4 inches and designed for pressures varying from 150 to 1500 pounds and temperatures up to 1100 degrees Fahr.

Metal - against - metal construction eliminates necessity for packing gland, packing and packing nut. To insert a new seat it is necessary only to unscrew cap from the base, eject tapered seat ring by screwing down on hand wheels, slip in new seat ring and tighten base cap. Line then is ready for service. Old seats and disks may be reground for future service.

Illuminated Magnifying Glass Helps Close Work

■ Continental Machine Specialties Inc., 1301 Washington avenue, Minneapolis, has developed a 2-power illuminated magnifying glass for use on its Doall contour machines or for use separately.

Purpose of glass is to provide ad-

ditional illumination on close work and to double size of the layout line on such work. Lens is of ample size, measuring 2 x 3¾ inches, permitting vision with both eyes without strain. The 15-watt lamp is ball jointed and clamps to guide post of the contour machine, as shown in illustration. Adjustment is provided by a double-lock clamp. Lamp is enclosed in same fixture as the glass, and illumination covers entire field of view.

Straightening Tool Helps Auto Repair Man

■ Ingersoll-Rand Co., Phillipsburg, N. J., has added to its line a body and fender straightener for use in automotive repair shops. Known as size 77, this tool is operated by compressed air at 90 pounds pressure and delivers 7500 blows per minute.

Straightener is intended to help the skilled workman in smoothing and ironing out dents, wrinkles, humps and rough spots after damaged automobile part has been reformed to its approximate original shape. Tool is available with three different sizes of yokes to accommodate a variety of jobs. Standard equipment includes four assorted

dollies, two upper dies, one wooden dolly holder, one small yoke, one medium yoke and air hose with connections.

Adds New Plant

(*Continued from Page* 55)

with a maximum schedule of 500 engines per day of one 8-hour shift. Beginning at a point in the front end of the building, this assembly line runs in a straight line for 490 feet. The first 250 feet consists of a 14-inch roller conveyor system with pallets.

At this point the engines are transferred to a power-driven conveyor with pallets for engines at 5-foot intervals. These pallets allow the engines to be indexed in any one of eight horizontal positions. The power conveyor is equipped with a variable-speed control which may be set to maintain whatever engine production schedule may be desired.

The assembly line for valve-in-head-type engines, Fig. 4, has a maximum production schedule of 180 engines per day and runs parallel to and within 20 feet of the light truck engine assembly line.

It is an overhead trolley conveyor with assembly carriers spaced every 10 feet. Carriers are made so engines may be indexed in any one of eight positions in a vertical plane to facilitate assembly.

Suspended from a trolley duct that runs between and the entire length of the two assembly lines are 40 power-driven wrenches for running down nuts, cap screws, studs, etc.

Three-Day Stock on Hand

A three-day supply of stock is kept along the assembly lines, the majority of it in tote pans which slide into special tote-pan racks. Since the lines are stocked during the second shift, when the assembly line is not operating, there is no interference with the engine assemblers.

Cylinder blocks are inspected on a roller conveyor extending from the cylinder block washing machine and then proceeding down this same roller conveyor where the engine assembly operations start.

Pistons are ribbon-fitted to cylinders, then marked with the block and cylinder number and placed on a conveyor which delivers the pistons to the rod and piston assembly bench. After six equal weight pistons are assembled with six equal-weight connecting rods, the set is again placed on a conveyor which takes it back to the assembly line at which point it is assembled with the engine.

A subassembly is made of the crankshaft and flywheel. Clutch face on the flywheel is checked for run-out. This subassembly is then lowered into the engine assembly by means of a Cleveland tramrail and hoist.

A unique fixture which compresses all the valve springs at once makes it a simple matter to slip the camshaft in place in the cylinder block.

Cylinder head assembly is made up complete, including spark plugs as a subassembly before the cylinder head is placed on the head studs for assembly to the engine. This is also true of the intake and exhaust manifolds, which are mounted on the engine as a complete subassembly. Distributor timing is made by an electric indicator light which shows when an engine is in proper time.

The assembled engines are delivered to the block test room by a trolley conveyor that accommodates both assembly lines. It can be seen along right wall in Fig. 5. Dynamometer stands are provided with water, oil, gas, and electrical connections so engines can be run either idle or under load.

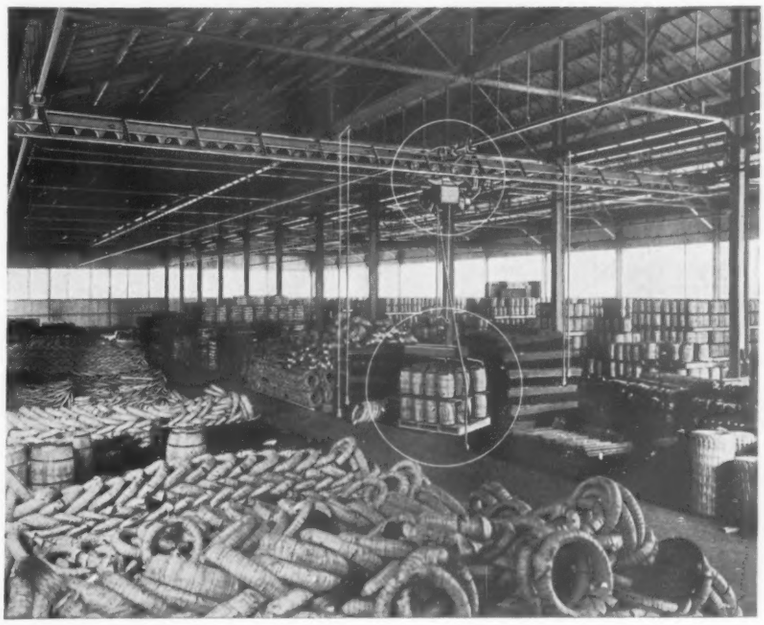
After engines are run-in, all are placed on tear-down stands, the oil pans removed and all bearings inspected. Oil pans are washed, put back, and engines placed on the trolley conveyor.

Water for the circulating system in the engines is maintained at a constant temperature of 160 degrees Fahr., by forcing a quarter of a mil-

CLEVELAND TRAMRAIL

MATERIALS HANDLING EQUIPMENT

FOR WAREHOUSING



● Another Tramrail Transfer Bridge installation—this one—48′ span - 3 runway; all motions of bridge, carrier and hoist are motorized and floor controlled through push buttons and contactor panel.

ALSO BUILDERS OF

CLEVELAND CRANES

FOR EVERY INDUSTRY

CLEVELAND TRAMRAIL

Division of

THE CLEVELAND CRANE & ENGINEERING CO.

1125 Depot St.

WICKLIFFE, OHIO

Or consult your phone directory under Cleveland Tramrail.

Fig. 8—Engines after test pass through water-wash type paint spray booth

lion cubic feet of air through water cooling coils in a basement room immediately below the block test room. Lubricating oil is carried away from the engines to a continuous pressure filtering and reclaiming system. This insures a supply of pure oil of constant viscosity at each test stand.

For test purposes, three silent test rooms are located at each end of the block test department. Three Cleveland tramrail cranes serve to transfer the engines between the test stands and trolley conveyor.

After leaving the block test room the conveyor carries the engines through a modern water-wash type paint spray booth, Fig. 8. Paint has thoroughly dried by the time the conveyor delivers the engines to the loading dock, Fig. 6, where the engines are placed either in freight cars or highway trucks for shipment to the Fort Wayne, Ind., or Springfield, O., truck plant.

Stimulating Sales by Development Engineering

(*Concluded from Page* 37)

in the right places and are materials of the right specification and heat treatment; has welding been overlooked; how does it compare with similar up-to-date equipment in other lines; can you incorporate any additional sales features; what can you leave out?

After redesigning, if any, get the product into actual use in as many typical installations as possible, even if at no cost to the consumer.

Obtain photographs and performance data in great detail.

Build a file of material which will be the basis for the preparation of sales literature, advertising and general publicity.

As soon as the success of the design and its satisfactory performand if there is no reason for secrecy ance in the field become apparent, because of the patent situation, furnish the advertising department with the factual basis for releasing news stories to trade papers. A surprising amount of desirable publicity can be obtained if this is properly handled.

Co-operate with the production department in getting set up for the manufacture of the initial lot of the new units.

Co-operate with the sales department in perfecting the marketing program and in training the sales force.

Follow through with the sales and service departments on every order shipped to the field, continuing the collection of performance data and photographs, and keeping on the alert for necessary changes in product details.

From the above outline it is evident to what degree the development engineer is concerned with sales and why it is that he should understand sales problems. High technical and specialized engineering problems can be taken up with outside experts, advice as to proper metals and heat treatments can be obtained from the suppliers of such materials, pure research can be farmed out to existing laboratories, but the development engineer is the man who *charts the course* and his main job is to produce something that will sell.

Contract Protects Both Parties

There should be a written contract between the company and the development engineer to protect both parties in their rights with respect to patents. Essentially, an employe's ideas belong to the employe unless they are conveyed to the employer by written agreement. If you add an experienced development engineer to your staff, the chances are that he will already have a number of patents in his own name, or that have been assigned to others. The rights under existing patents or patent applications should be clearly set down in the agreement. He may have ideas which he is willing to offer you upon certain terms along with his services. The basis upon which these ideas are to be transferred should be clearly set forth. Likewise, the ownership of ideas acquired by the engineer after entering your employment should be made clear. Both parties should be represented by competent patent attorneys in this business arrangement.

If ideas for your particular business are lacking, they may be sought in a number of ways, such as: Blind advertisements in trade papers of your industry, blind advertisements in other trade papers and metropolitan newspapers, subscribe to the services of reliable patent service firms, watch the weekly issue of patents in the Patent Office Gazette, make contacts with the development department of large firms such as General Motors, U. S. Steel Corp., General Electric, Westinghouse, Goodyear, etc. These firms receive hundreds of good ideas but which, for one reason or another, do not apply to their particular businesses. With the proper approach, you may be able to make arrangements whereby rejected ideas will be submitted to your firm. This requires personal contact and, in some cases, influence.

Choose Self-Contained Problems

It is important to select ideas that are self-contained problems to avoid immediate or future complications. For instance, the design and manufacture of a currently new product, the Silex Coffee Maker, involved only the problem of a device to brew coffee satisfactorily. In a similar way, the design and manufacture of the electric refrigerator is a self-contained problem. There are no complications as to conditions of use or as result of use.

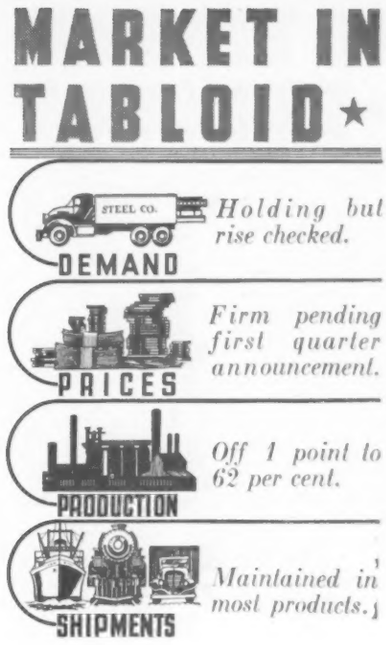
On the other hand, the manufacturers of insulating systems, for residential use, have the problem of adapting the insulating method to many different types of building construction, both new and old buildings. Added to that, it has been discovered that the use of insulation in the walls of air-conditioned houses, where humidity of the air is increased by adding water to the to the circulated hot air, results in complications caused by the water vapor penetrating the wall construction, freezing within the wall, and even causing the exterior paint on frame construction to peel. Thus, the firms engaged in the manufacture and installation of insulating materials have a great many variables to contend with and these products cannot be classed as self-contained problems.

Progress is being made constantly in the design and manufacture of nearly every thing we use. New products are continually coming out into the market. This process goes on relentlessly and will continue as long as men retain the capacity to think.

Research and development work costs money but this expense bears the same relation to the life of a business as the life insurance premium does to the life of an individual. It is protection against the inevitable time when it will be impossible to continue doing the thing you are doing now. It is the only way to safeguard the people who depend upon you or your business for a livelihood.

Demand Levels Off As Production Dips

Seasonal Influences Factor; Railroad Buying Gains



■ SIGNS of the anticipated leveling off in steel demand and production are more pronounced.

Seasonal influences are retarding business in some products. With the approach of the year-end, buyers generally are ordering for only early needs, and little, if any, improvement will be shown in November bookings. Sheet and strip sales are off substantially since a month ago because of previous forward coverage.

Nevertheless, the outlook for relatively steady steelmaking the remainder of the quarter is bright. Production dropped 1 point to 62 per cent last week, the first reduction since early October. This is believed to mark the passing of the fall peak in operations, but business on hand and in prospect will temper further seasonal recession.

Because it constitutes such an important share of total demand, automotive needs the next 30 to 60 days will be a major factor in adjusting the trend of steel production. The sharp, and somewhat unexpected, rise in motorcar assemblies partly has been responsible for the current elevated level of steelmaking. Automobile production now has reached a volume unlikely to be bettered materially this quarter, except to regain the ground lost over the recent holiday.

Motorcar output last week was 84,930 units, against 96,735 the week before and 58,955 a year ago. General Motors reduced from 44,250 units to 40,125; Chrysler dropped from 24,950 to 20,840; Ford cut from 16,975 to 14,000; while all others curtailed from 10,560 to 9965. Tentative schedules call for sustained operations at least through December.

Rail, Freight Car Orders And Inquiries Encouraging

A small, but encouraging, flurry has appeared in railroad orders. Louisville & Nashville has placed 17,280 tons of rails with Tennessee Coal, Iron & Railroad Co. Illinois Central has ordered 1000 fifty-ton, all-steel box cars from American Car & Foundry Co., duplicating a like purchase made a number of weeks ago. Norfolk & Western is in the market for 1500 hopper cars and 600 box cars.

Additional track material buying by railroads is looked for the next 60 days, the extent of which is problematical at this time. The carriers have reduced their rail stocks considerably, however, and some purchasing will be mandatory.

Substantial tonnages of heavy steel products will be required for government vessels placed recently. Three battleships and six cargo boats involve about 100,000 tons, shipment to spread over an extended period.

Tin plate demand is slow to respond to the recent price reduction, production being retarded by the season and remaining well below the average for all steel products. Business this year felt the effects of the large carryover of tin plate from 1937, but with stocks now small the outlook for 1939 is materially brighter.

Better Outlook Seen For Private Building Activity

Building construction is another industry whose prospects have favorable implications for steel, particularly as regards residential, commercial and public utility building. Currently bolstered by government-financed work, activity in steel for construction purposes makes a good comparison with that of the corresponding period of recent years.

Steel production was affected but little last week by the Thanksgiving holiday, but schedules were lowered in many districts. Reductions included 2 points at Pittsburgh to 50 per cent and 1.5 points at Chicago to 58.5 per cent. Other areas to curtail output were Cleveland, off 2.5 points to 77 per cent; New England, off 6 to 74 per cent; Cincinnati off 5 to 70 per cent; St. Louis, off 3 to 48.5 per cent; eastern Pennsylvania off 2 to 34 per cent.

Youngstown rose 1 point to 61 per cent, Buffalo was up 2 points to 51 and Birmingham was 7 points higher at 75. Unchanged districts were Wheeling at 66 and Detroit at 82.

Scrap prices continue strong, but the trend is mixed in some districts. Advances at Pittsburgh and Chicago raise the scrap composite 17 cents to $14.96 and the iron and steel composite 2 cents to $36.37. The finished steel composite is unchanged at $56.50.

COMPOSITE MARKET AVERAGES

	Nov. 26	Nov. 19	Nov. 12	One Month Ago Oct., 1938	Three Months Ago Aug., 1938	One Year Ago Nov., 1937	Five Years Ago Nov., 1933
Iron and Steel	$36.37	$36.35	$36.29	$36.48	$36.50	$38.96	$30.25
Finished Steel	56.50	56.50	56.50	57.04	57.20	61.70	49.20
Steelworks Scrap..	14.79	14.79	14.29	14.00	14.44	13.32	9.64

Iron and Steel Composite:—Pig iron, scrap, billets, sheet bars, wire rods, tin plate, wire, sheets, plates, shapes, bars, black pipe, rails, alloy steel, hot strip, and cast iron pipe at representative centers. Finished Steel Composite:—Plates, shapes, bars, hot strip, nails, tin plate, pipe. Steelworks Scrap Composite:—Heavy melting steel and compressed sheets.

COMPARISON OF PRICES

Representative Market Figures for Current Week; Average for Last Month, Three Months and One Year Ago

Finished Material

	Nov. 26, 1938	Oct. 1938	Aug. 1938	Nov. 1937
Steel bars, Pittsburgh	2.25c	2.25c	2.25c	2.45c
Steel bars, Chicago	2.25	2.25	2.25	2.50
Steel bars, Philadelphia	2.57	2.57	2.57	2.74
Iron bars, Terre Haute, Ind.	2.15	2.15	2.15	2.35
Shapes, Pittsburgh	2.10	2.10	2.10	2.25
Shapes, Philadelphia	2.215	2.215	2.215	2.455
Shapes, Chicago	2.10	2.10	2.10	2.30
Plates, Pittsburgh	2.10	2.10	2.10	2.25
Plates, Philadelphia	2.15	2.15	2.15	2.435
Plates, Chicago	2.10	2.10	2.10	2.30
Sheets, hot-rolled, Pittsburgh	2.15	2.10	2.15	2.40
Sheets, cold-rolled, Pittsburgh	3.20	3.15	3.20	3.55
Sheets, No. 24, galv., Pittsburgh	3.50	3.50	3.50	3.80
Sheets, hot-rolled, Gary	2.15	2.10	2.15	2.50
Sheets, cold-rolled, Gary	3.20	3.15	3.20	3.65
Sheets, No. 24, galv., Gary	3.50	3.50	3.50	3.90
Bright bess., basic wire, Pitts.	2.60	2.60	2.60	2.90
Tin plate, per base box, Pitts.	$5.00	$5.35	$5.35	$5.35
Wire nails, Pittsburgh	2.45	2.45	2.45	2.75

Semifinished Material

Sheet bars, open-hearth, Youngs.	$34.00	$34.00	$34.00	$37.00
Sheet bars, open-hearth, Pitts.	34.00	34.00	34.00	37.00
Rerolling billets, Pittsburgh	34.00	34.00	34.00	37.00
Wire rods, No. 5 to $\frac{5}{32}$-inch, Pitts.	43.00	43.00	43.00	47.00

Pig Iron

	Nov. 26, 1938	Oct. 1938	Aug. 1938	Nov. 1937
Bessemer, del. Pittsburgh	$22.34	$22.34	$21.34	$25.26
Basic, Valley	20.50	20.50	19.50	23.50
Basic, eastern, del. Philadelphia	22.34	22.34	21.34	25.26
No. 2 foundry, Pittsburgh	22.21	22.21	21.21	25.21
No. 2 foundry, Chicago	21.00	21.00	20.00	24.00
Southern No. 2, Birmingham	17.38	17.38	16.38	20.38
Southern No. 2, del. Cincinnati	20.89	20.89	19.89	23.89
No. 2X, Del. Phila. (differ. av.)	23.215	23.215	22.215	26.135
Malleable, Valley	21.00	21.00	20.00	24.00
Malleable, Chicago	21.00	21.00	20.00	24.00
Lake Sup., charcoal, del. Chicago	28.34	28.34	28.34	30.14
Gray forge, del. Pittsburgh	21.17	21.17	20.17	24.17
Ferromanganese, del. Pittsburgh	97.77	97.77	97.77	107.35

Scrap

Heavy melting steel, Pittsburgh	$15.50	$14.95	$15.20	$14.10
Heavy melt. steel, No. 2, E. Pa.	12.75	12.95	13.00	12.25
Heavy melting steel, Chicago	14.75	13.05	14.00	12.55
Rails for rolling, Chicago	17.75	16.25	18.25	15.10
Railroad steel specialties, Chicago	16.50	15.55	16.75	16.75

Coke

Connellsville, furnace, ovens	$ 3.75	$3.75	$3.75	$4.37
Connellsville, foundry, ovens	5.00	5.00	5.00	5.25
Chicago, by-product fdry., del.	10.50	10.50	10.50	11.00

STEEL, IRON, RAW MATERIAL, FUEL AND METALS PRICES

Except when otherwise designated, prices are base, f.o.b. cars.

Sheet Steel

Hot Rolled

Pittsburgh	2.15c
Chicago, Gary	2.15c
Cleveland	2.15c
Detroit, del.	2.25c
Buffalo	2.15c
Sparrows Point, Md.	2.15c
New York, del.	2.39c
Philadelphia, del.	2.32c
Granite City, Ill.	2.25c
Middletown, O.	2.15c
Youngstown, O.	2.15c
Birmingham	2.15c
Pacific Coast points	2.65c

Cold Rolled

Pittsburgh	3.20c
Chicago, Gary	3.20c
Buffalo	3.20c
Cleveland	3.20c
Detroit, delivered	3.30c
Philadelphia, del.	3.52c
New York, del.	3.54c
Granite City, Ill.	3.30c
Middletown, O.	3.20c
Youngstown, O.	3.20c
Pacific Coast points	3.80c

Galvanized No. 24

Pittsburgh	3.50c
Chicago, Gary	3.50c
Buffalo	3.50c
Sparrows Point, Md.	3.50c
Philadelphia, del.	3.67c
New York, delivered	3.74c
Birmingham	3.50c
Granite City, Ill.	3.60c
Middletown, O.	3.50c
Youngstown, O.	3.50c
Pacific Coast points	4.00c

Tin Mill Black Plate

Pittsburgh	3.15c
Chicago, Gary	3.15c
Granite City, Ill.	3.25c

Long Ternes No. 24 Unassorted

Pittsburgh, Gary	3.95c
Pacific Coast	4.65c

Enameling Sheets

	No. 10	No. 20
Pittsburgh	2.75c	3.35c
Chicago, Gary	2.75c	3.35c
Granite City, Ill.	2.85c	3.45c
Youngstown, O.	2.75c	3.35c
Cleveland	2.75c	3.35c
Middletown, O.	2.75c	3.35c
Pacific Coast	3.35c	3.95c

Corrosion and Heat-Resistant Alloys

Pittsburgh base, cents per lb.

Chrome-Nickel

	No. 302	No. 304
Bars	24.00	25.00
Plates	27.00	29.00
Sheets	34.00	36.00
Hot strip	21.50	23.50
Cold strip	28.00	30.00

Straight Chromes

	No. 410	No. 430	No. 442	No. 446
Bars	18.50	19.00	22.50	27.50
Plates	21.50	22.00	25.50	30.50
Sheets	26.50	29.00	32.50	36.50
Hot strip	17.00	17.50	23.00	28.00
Cold stp.	22.00	22.50	28.50	36.50

Steel Plate

Pittsburgh	2.10c
New York, del.	2.29c
Philadelphia, del.	2.15c
Boston, delivered	2.42c
Buffalo, delivered	2.33c
Chicago or Gary	2.10c
Cleveland	2.10c
Birmingham	2.10c
Coatesville, base	2.10c
Sparrows Point, base	2.10c
Claymont, Del.	2.10c
Youngstown	2.10c
Gulf ports	2.45c
Pacific Coast points	2.60c

Steel Floor Plates

Chicago	3.35c
Gulf ports	3.70c
Pacific Coast ports	3.95c
Pittsburgh	3.35c

Standard Shapes

Pittsburgh	2.10c
Philadelphia, del.	2.21½c
New York, del.	2.27c
Boston, delivered	2.41c
Bethlehem	2.10c
Chicago	2.10c
Cleveland, del.	2.30c
Buffalo	2.10c
Gulf ports	2.45c
Birmingham	2.10c
St. Louis, del.	2.34c
Pacific Coast points	2.70c

Tin and Terne Plate

Tin Plate, Coke (base box)

Pittsburgh, Gary, Chicago	$5.00
Granite City, Ill.	5.10

Mfg. Terne Plate (base box)

Pittsburgh, Gary, Chgo.	$4.30
Granite City, Ill.	4.40

Bars

Soft Steel

(Base, 3 to 25 tons)

Pittsburgh	2.25c
Chicago or Gary	2.25c
Duluth	2.35c
Birmingham	2.25c
Cleveland	2.25c
Buffalo	2.25c
Detroit, delivered	2.35c
Philadelphia, del.	2.57c
Boston, delivered	2.62c
New Cork, del.	2.59c
Gulf ports	2.60c
Pacific Coast points	2.85c

Rail Steel

To Manufacturing Trade

Pittsburgh	2.10c
Chicago or Gary	2.10c
Detroit, delivered	2.20c
Cleveland	2.10c

2¼" O. D.	13	14.54	16.76
2¼" O. D.	12	16.01	18.45
2½" O. D.	12	17.54	20.21
2¾" O. D.	12	18.59	21.42
3" O. D.	12	19.50	22.48
3½" O. D.	11	24.62	28.37
4" O. D.	10	30.54	35.20
4½" O. D.	10	37.35	43.04
5" O. D.	9	46.87	54.01
6" O. D.	7	71.96	82.93

Cast Iron Pipe

Class B Pipe—Per Net Ton

6-in., & over, Birm..$42.00-43.00
4-in., Birmingham.. 45.00-46.00
4-in., Chicago 53.80-54.80
6-in. & over, Chicago 50.80-51.80
6-in. & over, east fdy. 46.00
Do., 4-in. 49.00

Class A Pipe $3 over Class B
Stnd. fitgs., Birm., base $100.00

Semifinished Steel

Rerolling Billets, Slabs

(Gross Tons)

Pittsburgh, Chicago, Gary, Clev., Buffalo, Young., Birm., Sparrows Point..$34.00
Duluth (billets) 36.00
Detroit, delivered 36.00

Forging Quality Billets

6 x 6 to 9 x 9-in., base

Pitts., Chicago, Buffalo... 40.00
Duluth 42.00

Sheet Bars

Pitts., Cleveland, Young., Sparrows Point, Buffalo, Canton, Chicago.. 34.00
Detroit, delivered 36.00

Wire Rods

Pitts., Cleveland, Chicago, Birmingham No. 5 to $\frac{9}{32}$-inch incl. 43.00
Do., over $\frac{9}{32}$ to $\frac{47}{64}$-in. incl. 48.00
Worcester up $2; Galveston up $6; Pacific Coast up $9.

Skelp

Pitts., Chi., Young., Buff., Coatesville, Sparrows Pt. 1.90c

Coke

Price Per Net Ton

Beehive Ovens

Connellsville, fur. .. $3.75
Connellsville, fdry.. 4.75- 5.50
Connell. prem. fdry. 5.75- 6.25
New River fdry. .. 6.50- 6.75
Wise county fdry... 5.50- 5.75
Wise county fur. .. 4.50- 4.75

By-Product Foundry

Newark, N. J., del. . 10.88-11.35
Chi., ov., outside del. 9.75
Chicago, del. 10.50
Milwaukee, ovens.. 10.50
New England, del... 12.50
St. Louis, del. 11.00-11.50
Birmingham, ovens. 7.00
Indianapolis, del. .. 10.00
Cincinnati, del. 9.75
Cleveland, del. 10.30
Buffalo, del. 10.50
Detroit, del. 10.25
Philadelphia, del. .. 10.65

Coke By-Products

Spot, gal., freight allowed east of Omaha

Pure and 90% benzol ... 16.00c
Toluol, two degree 22.00c
Solvent naphtha 26.00c
Industrial xylol 26.00c

Per lb. f.o.b. Frankford and St. Louis

Phenol (200 lb. drums).. 16.25c
Do. (450 lbs.) 15.25c

Eastern Plants, per lb.

Naphthalene flakes, balls, bbls. to jobbers 5.75c
Per ton, bulk, f.o.b. port
Sulphate of ammonia ...$27.50

and large nut, bolt mfrs. l.c.l. $5.40; c.l. $5.75 off
Do., less carloads, 5 kegs or more, no discount on any extras.. $3.90
Do., under 5 kegs no disc. on any extras... $4.05

Welded Iron, Steel Pipe

Base discounts on steel pipe. Pitts., Lorain, O., to consumers in carloads. Gary, Ind., 2 points less on lap weld, 1 point less on butt weld. Chicago delivery 2½ and 1½ less, respectively. Wrought pipe, Pittsburgh base.

Butt Weld

In.	Blk.	Galv.
Steel		
⅛	63½	54
¾	66½	58
1—3	68½	60½
Iron		
¾	30	13
1—1¼	34	19
1½	38	21½
2	37½	21

Lap Weld

Steel		
2	61	52½
2½—3	64	55½
3½—6	66	57½
7 and 8	65	55½
9 and 10	64½	55
11 and 12	63½	54
Iron		
2	30½	15
2½—3½	31½	17½
4	33½	21
4½—8	32½	20
9—12	28½	15

Line Pipe

	Blk.	Galv.
Steel		
1 to 3, butt weld	67½	
2, lap weld	60	
2½ to 3, lap weld	63	
3½ to 6, lap weld	65	
7 and 8, lap weld	64	
10-inch lap weld	63½	
12-inch, lap weld	62½	
Iron		
¾ butt weld	25	7
1 and 1¾ butt weld	29	13
1½ butt weld	33	15½
2 butt weld	32½	15
1½ lap weld	23½	7
2 lap weld	25½	9
2½ to 3½ lap weld	26½	11½
4 lap weld	28½	15
4½ to 8 lap weld..	27½	14
9 to 12 lap weld ..	23½	9

Boiler Tubes

Carloads minimum wall seamless steel boiler tubes, cut lengths 4 to 24 feet, f.o.b. Pittsburgh, base price per 100 feet subject to usual extras.

Lap Welded

Sizes	Gage	Steel	Charcoal Iron
1½" O. D.	13	$ 9.72	$23.71
1¾" O. D.	13	11.06	22.93
2" O. D.	13	12.38	19.35
2¼" O. D.	13	13.79	21.68
2¼" O. D.	12	15.16	.....
2½" O. D.	12	16.58	26.57
2¾" O. D.	12	17.54	29.00
3" O. D.	12	18.35	31.36
3½" O. D.	11	23.15	39.81
4" O. D.	10	28.66	49.90
5" O. D.	9	44.25	73.93
6" O. D.	7	68.14	.....

Seamless

Sizes	Gage	Hot Rolled	Cold Drawn
1" O. D.	13	$ 7.82	$ 9.01
1¼" O. D.	13	9.26	10.67
1½" O. D.	13	10.23	11.79
1¾" O. D.	13	11.64	13.42
2" O. D.	13	13.04	15.03

Strip and Hoops

(Base, hot-rolled, 1 to 25 tons; cold-rolled, 3 to 25 tons)

Hot strip to 23⅛-in.

Pittsburgh, Chicago, Gary, Cleveland Youngstown, Middletown, Birmingham.... 2.15c
Detroit, del. 2.25c
Philadelphia, del. 2.47c
New York, del. 2.51c
Cooperage hoop, Youngs., Pitts., Chicago, Birm... 2.25c
Cold strip, 0.25 carbon and under, Pittsburgh, Cleveland, Youngstown 2.95c
Chicago 3.05c
Detroit, del. 3.05c
Worcester, Mass. 3.15c

Carbon	Cleve. Pitts.
0.26—0.50	2.95c
0.51—0.75	4.30c
0.76—1.00	6.15c
Over 1.00	8.35c

Worcester, Mass., $4 higher.

Commodity Cold-Rolled Strip	
Pitts.-Cleve.-Youngstown	3.10c
Detroit, del.	3.20c
Worcester, Mass.	3.50c

Lamp stock up 10 cents.

Rails, Fastenings

(Gross Tons)

Standard rails, mill ... $40.00
Relay rails, Pittsburgh 20—100 lbs. 32.50-35.50
Light rails, billet qual., Pitts., Chicago, B'ham. $40.00
Do., rerolling quality.. 39.00

Cents per pound

Angle bars, billet, mills 2.70c
Do., axle steel 2.35c
Spikes, R. R. base 3.00c
Track bolts, base 4.15c
Car axles forged, Pitts., Chgo., B'ham. 3.15c
Tie plates, base 2.15c

Base, light rails 25 to 60 lbs.; 20 lbs. up $2; 16 lbs. up $4; 12 lbs. up $8; 8 lbs. up $10. Base railroad spikes 200 kegs or more; base plates 20 tons.

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham, Chicago. Discounts to legitimate trade as per Dec. 1, 1932, lists, carloads 5% up; full containers additional 10%.

Carriage and Machine

½ x 6 and smaller ..65-5-5 off
Do. larger, to 1-in. 60-10-5 off
Do. 1⅛ and larger 60-5-5 off
Tire bolts .....50-5 off

Stove Bolts

In packages with nuts attached 75 off; in packages with nuts separate 75-12½ off; bulk 85 off on 15,000 of 3-inch and shorter, or 5000 over 3-inch.

Step bolts .....50-10-5-5 off
Elevator bolts ....50-10-5-5 off
Plow bolts .....65-5-5 off

Nuts

Semifinished hex. U.S.S.	S.A.E.
¼-⅞-in., incl. ..65-10	70-5
½-⅞-in., incl. ..65-5	70
⅝-1-in., incl. ...60-10	65
1⅛ and larger..60-5	60-5

Hexagon Cap Screws

Milled .....50-10-5 off
Upset, 1-in. smaller..67½-10 off

Square Head Set Screws

Upset, 1-in., smaller..75-10 off
Headless set screws....70-10 off

Rivets, Washers

Structural, Pittsburgh, Cleveland, Chicago ... 3.40c
⅞-inch and smaller, Pitts., Chi., Cleve. ..65-10 off
Wrought washers, Pitts., Chi., Phila., to jobbers Buffalo 2.10c
Birmingham 2.10c
Gulf ports 2.45c
Pacific coast points 2.70c

Iron

Terre Haute, Ind. 2.15c
Chicago 2.15c
Philadelphia 2.47c
Pittsburgh, refined....3.50-8.00c

Reinforcing

New billet, straight lengths, quoted by distributors

Pittsburgh 2.05c
Chicago, Gary, Buffalo, Cleve., Birm., Young., Sparrows Pt. 2.05c
Detroit, delivered 2.15c
Gulf ports 2.40c
Pacific coast ports, f.o.b. car docks 2.50c
Philadelphia, del. 2.22c

Rail steel, straight lengths, quoted by distributors

Pittsburgh, Gary, Chicago, Buffalo, Cleveland, Birmingham.... 1.90c
Detroit, delivered 2.00c
Gulf ports 2.25c
Pacific Coast 2.35c

Wire Products

Pitts.-Cleve.-Chicago-Birm. base per 100 lb. keg in carloads

Standard wire nails.... $2.45
Cement coated nails $2.45

(Per pound)

Polished staples 3.15c
Galv. fence staples 3.40c
Barbed wire, galv. 3.20c
Annealed fence wire.... 2.95c
Galv. fence wire 3.35c
Woven wire fencing (base C. L. column) 67.00
Single loop bale ties, (base C. L. column) .. 56.00

To Manufacturing Trade

Base, Pitts. - Cleve. - Chicago-Birmingham (except spring wire)

Bright bess., basic wire.. 2.60c
Galvanized wire 2.65c
Spring wire 3.20c
Worcester, Mass., $2 higher on bright basic and spring wire.
Cut nails, C. L. Pitts. (10% disc. on all extras) $3.60

Cold-Finished Bars

	Carbon	Alloy
Pittsburgh	2.70c	3.40c
Chicago	2.70c	3.40c
Gary, Ind.	2.70c	3.40c
Detroit	2.75c	*3.50c
Cleveland	2.70c	3.40c
Buffalo	2.70c	3.40c

* Delivered.

Alloy Bars (Hot)

(Base, 3 to 25 tons)

Pittsburgh, Buffalo, Chicago, Massillon, Canton, Bethlehem 2.80c
Detroit, delivered 2.90c

	Alloy Diff.		Alloy Diff.
S.A.E.		S.A.E.	
2000	0.35	3100	0.70
2100	0.75	3200....	1.35
2300	1.55	3300....	3.80
2500	2.25	3400....	3.20
4100	0.15 to 0.25	Mo.	0.55
4600	0.20 to 0.30	Mo. 1.50-2.00 Ni.	1.10
5100	0.80-1.10	Cr.	0.45
5100 Cr. spring flats			0.15
6100 bars			1.20
6100 spring flats			0.85
Cr. N., Van.			1.50
Carbon Van.			0.85
9200 spring flats			0.15
9200 spring rounds, squares			0.40

Electric furnace up 50 cents.

Piling

Pittsburgh 2.40c
Chicago, Buffalo 2.40c
Gulf ports 2.75c

Pig Iron

Delivered prices include switching charges only as noted. No. 2 foundry is 1.75-2.25 sil.; 25c diff. for each 0.25 sil. above 2.25 sil.; 50c diff. below 1.75 sil. Gross tons.

Basing Points:	No. 2 Fdry.	Malleable	Basic	Bessemer
Bethlehem, Pa.	$22.00	$22.50	$21.50	$23.00
Birdsboro, Pa.	22.00	22.50	21.50	23.00
Birmingham, Ala.‡	17.38	.....	16.38	22.00
Buffalo	21.00	21.50	20.00	22.00
Chicago	21.00	21.00	20.50	21.50
Cleveland	21.00	21.00	20.50	21.50
Detroit	21.00	21.00	20.50	21.50
Duluth	21.50	21.50	.....	22.00
Erie, Pa.	21.00	21.50	20.50	22.00
Everett, Mass.	22.75	23.25	22.25	23.75
Granite City, Ill.	21.00	21.00	20.50	21.50
Hamilton, O.	21.00	21.00	20.50	.....
Neville Island, Pa.	21.00	21.00	20.50	21.50
Provo, Utah	19.00	.....	.....	.....
Sharpsville, Pa.	21.00	21.00	20.50	21.50
Sparrow's Point, Md.	22.00	.....	21.50	.....
Swedeland, Pa.	22.00	22.50	21.50	23.00
Toledo, O.	21.00	21.00	20.50	21.50
Youngstown, O.	21.00	21.00	20.50	21.50

‡Subject to 38 cents deduction for 0.70 per cent phosphorus or higher.

Delivered from Basing Points:				
Akron, O., from Cleveland	22.39	22.39	21.89	22.89
Baltimore from Birmingham	22.78	.....	21.66	.....
Boston from Birmingham	22.87	.....	.....	.....
Boston from Everett, Mass.	23.25	23.75	22.75	24.25
Boston from Buffalo	23.25	23.75	22.75	24.25
Brooklyn, N. Y., from Bethlehem	24.50	25.00	.....	.....
Canton, O., from Cleveland	22.39	22.39	21.89	22.89
Chicago from Birmingham	†21.22	.....	.....	.....
Cincinnati from Hamilton, O.	21.44	22.11	21.61	.....
Cincinnati from Birmingham	21.06	.....	20.06	.....
Cleveland from Birmingham	21.32	.....	20.82	.....
Mansfield, O., from Toledo, O.	22.94	22.94	22.44	22.44
Milwaukee from Chicago	22.10	22.10	21.60	22.60
Muskegon, Mich., from Chicago, Toledo or Detroit	24.19	24.19	23.69	24.69
Newark, N. J., from Birmingham	23.15	.....	.....	.....
Newark, N. J., from Bethlehem	23.53	24.03	.....	.....
Philadelphia from Birmingham	22.46	.....	21.96	.....
Philadelphia from Swedeland, Pa.	22.84	23.34	22.34	.....
Pittsburgh district from Neville Island	{ Neville base, plus 69c, 84c, and $1.24 freight.			
Saginaw, Mich., from Detroit	23.45	23.45	22.95	22.95

	No. 2 Fdry.	Malleable	Basic	Bessemer
St. Louis, northern	21.50	21.50	21.00	.....
St. Louis from Birmingham	†21.12	.....	20.62	.....
St. Paul from Duluth	23.63	23.63	.....	24.13

†Over 0.70 phos.

Low Phos.

Basing Points: Birdsboro and Steelton, Pa., and Standish, N. Y., $26.50, Phil, base, standard and copper bearing, $27.63.

Gray Forge		Charcoal	
Valley furnace	$20.50	Lake Superior fur.	$25.00
Pitts. dist. fur.	20.50	do., del. Chicago	28.34
		Lyles, Tenn.	23.50

Silvery†

Jackson count, O., base: 6-6.50 per cent $25.50; 6.51-7—$26.00; 7-7.50—$26.50; 7.51-8—$27.00; 8-8.50—$27.50; 8.51-9—$28.00; 9-9.50—$28.50; Buffalo $1.25 higher.

Bessemer Ferrosilicon†

Jackson county, O., base: Prices are the same as for silveries, plus $1 a ton.

†The lower all-rail delivered price from Jackson, O., or Buffalo is quoted with freight allowed.

Manganese differentials in silvery iron and ferrosilicon, 2 to 3%, $1 per ton add. Each unit over 3%, add $1 per ton.

Refractories

Per 1000 f.o.b. Works, Net Prices

Fire Clay Brick

Super Quality

Pa., Mo., Ky.	$60.80

First Quality

Pa., Ill., Md., Mo., Ky.	47.50
Alabama, Georgia	47.50
New Jersey	52.50

Second Quality

Pa., Ill., Ky., Md., Mo.	42.75
Georgia, Alabama	34.20
New Jersey	49.00

Ohio

First quality	39.90
Intermediate	36.10
Second quality	31.35

Malleable Bung Brick

All bases	$56.05

Silica Brick

Pennsylvania	$47.50
Joliet, E. Chicago	56.05
Birmingham, Ala.	47.50

Ladle Brick

(Pa., O., W. Va., Mo.)

Dry press	$28.00
Wire cut	$26.00

Magnesite

Imported dead - burned grains, net ton f.o.b. Chester, Pa., and Baltimore bases (bags)	$45.00
Do. domestic	40.00
Do., f.o.b. Chewelah, Wash., net ton, bulk	22.00
net ton, bags	26.00
Quickset magnesite grains, f.o.b. Chewelah, Wash., net ton, bulk	22.00

Basic Brick

Net ton, f.o.b. Baltimore, Plymouth Meeting, Chester, Pa.

Chrome brick	$47.00
Chem. bonded chrome	47.00
Magnesite brick	67.00
Chem. bonded magnesite	57.00

Fluorspar, 85-5

Washed gravel, duty paid, tide, net ton	$23.50-24.00
Washed gravel, f.o.b. Ill., Ky., net ton, carloads, all rail $20, barge	$22.00
No. 2 lump	22.00-23.00

Ferroalloy Prices

Ferromanganese, 78-82%, tidewater, duty pd. $92.50
Do., del. Pittsburgh 97.77

Spiegeleisen, 19-21% dom. Palmerton, Pa., spot 28.00
Do., New Orleans 28.00
Do., 26-28%, Palmerton 33.00

Ferrosilicon, 50% freight allowed, c.l. 69.50
Do., ton lot 80.50
Do., 75 per cent 126.00
Spot, $5 a ton higher.

Silicoman, 2½ carbon 97.75
2% carbon 102.75 1%, 112.75
Contract ton price $11 higher; spot $5 over contract.

Ferrotungsten, stand., lb. con. del. cars 1.60-1.65

Ferrovanadium, 35 to 40%, lb., cont. 2.70-2.80

Ferrophosphorus, gr. ton, c.l., 17-18% Rockdale, Tenn., basis, 18%, $3 unitage, 58.50; electrolytic, per ton, c. l., 23-26% f.o.b. Monsanto, Tenn., 24% $3 unitage 75.00

Ferrochrome, 66-70 chromium, 4-6 carbon, cts. lb. del. carlots 10.50c
Do., ton lots 11.25c
Do., less-ton lots 11.50c

67-72% carloads, 2% carbon, per lb. contained chrome 16.50c
Do., ton lots 17.25c
Do., less-ton lots 17.50c

	Carloads	Ton lots	Less ton
2% carb.	16.50c	17.25c	17.50c
1% carb.	17.50c	18.25c	18.50c
0.10% carb.	18.50c	19.25c	19.50c
0.20% carb.	19.50c	20.25c	20.50c

Spot ¼c higher

Ferromolybdenum, 55-65% molyb. cont., f.o.b. mill, lb. 0.95

Calcium molybdate, lb. molyb. cont., f.o.b. mill 0.80

Ferrotitanium, 40%, lb. con. ti., ton lots $1.23
Do., less-ton lots 1.25
20-25% carbon, 0.10 max., ton lots, lb. 1.35
Do, less-ton lots 1.40
Spot 5c higher

Ferrocolumbium, 50-55%, contract, lb. con. col., f.o.b. Niagara Falls $2.25
Do, less-ton lots 2.30
Spot is 10c higher

Technical molybdenum trioxide, 53 to 60% molybdenum, lb. molyb. cont., f.o.b. mill 0.80

Ferro-carbon-titanium, 15-18%, ti., 6-8% carb., carlots, contr., net ton $142.50
Do, spot 145.00
Do, contract, ton lots 145.00
Do, spot, ton lots 150.00

15-18% ti., 3-5% carbon, carlots, contr., net ton 157.50
Do, spot 160.00
Do, contract, ton lots. 160.00
Do, spot, ton lots 165.00

Alsifer, contract carlots, f.o.b. Niagara Falls, lb. 7.50c
Do, ton lots 8.00c
Do, less-ton lots 8.50c
Spot ½c lb. higher

Chromium Briquets, contract carloads, freight allowed, lb. 7.25c
Do, spot carlots, bulk 7.50c
Do, ton lots 8.00c
Do, less-ton lots 8.50c

Tungsten Metal Powder, according to grade, spot shipment, 200-lb. drum lots, lb. $2.05
Do, smaller lots 2.15

Vanadium Pentoxide, contract, lb. contained $1.10
Do, spot 1.15

Chromium Metal, 98% cr., 0.50 carbon max., contract, lb. con. chrome 80.00c
Do, spot 85.00c

88% chrome, contract 79.00c
Do, spot 84.00c

Silicon Metal, 1% iron, contract, lb. 14.50c
Do, 2% 13.00c
Spot ¼c higher

Silicon Briquets, contract, carloads, freight allowed, ton $69.50
Carload, spot 74.50
Less-ton lots, lb. 3.75c

Manganese Briquets, contract carloads, freight allowed lb. 4.75c
Ton lots 5.25c
Less-ton lots 5.50c
Spot ¼c higher

Zirconium Alloy, 12-15%, carloads, gross ton $97.50
Do, spot 102.50

34-40%, contract, carloads, lb., alloy 14.00c
Do, ton lots 15.00c
Do, less-ton lots 16.00c
Spot ¼c higher

Molybdenum Powder, 99%, f.o.b. York, Pa. 200-lb. kegs, lb. $2.60
Do, 100-200 lb. lots 2.75
Do, under 100-lb. lots 3.00

WAREHOUSE STEEL PRICES

Base Prices in Cents Per Pound, Delivered Locally, Subject to Prevailing Differentials

	Soft Bars	Bands	Hoops	Plates ¼-in. & Over	Structural Shapes	Floor Plates	Sheets: Hot Rolled	Sheets: Cold Rolled	Sheets: Galv. No. 24
Boston	3.98	4.21	5.21	3.85	3.85	5.66	3.86	4.93	4.76
New York (Metropolitan)	3.94	4.11	4.11	3.76	3.75	5.56	3.73	4.90	4.40
Philadelphia	3.60	3.60	4.10	3.40	3.40	5.00	3.40	....	4.50
Baltimore	3.80	3.95	4.35	3.65	3.65	5.00	3.70	5.05	4.30
Norfolk, Va.	4.00	4.15	4.55	3.85	3.85	5.20	3.90	4.80	5.40
Buffalo	3.60	3.97	3.97	3.77	3.55	5.40	3.50	4.55	4.40
Pittsburgh	3.60	3.75	3.75	3.55	3.55	5.15	3.50	4.60	4.50
Cleveland	3.50	3.65	3.65	3.55	3.73	5.33	3.50	4.70	4.62
Detroit	3.68	3.83	3.83	3.75	3.80	5.42	3.58	4.65	4.74
Cincinnati	3.85	3.82	3.82	3.80	3.83	5.43	3.57	....	4.57
Chicago	3.60	3.75	3.75	3.55	3.55	5.15	3.50	4.45	4.50
Minneapolis	3.85	4.00	4.00	3.80	3.80	5.40	3.75	5.10	4.75
Milwaukee	3.73	3.88	3.88	3.68	3.68	5.28	3.63	4.58	4.63
St. Louis	3.87	4.02	4.02	3.82	3.82	5.42	3.77	4.72	4.77
Kansas City	4.15	4.30	4.30	4.10	4.10	5.70	4.10	....	4.75
Memphis	4.01	4.16	4.16	3.96	3.96	5.71	3.91	....	5.26
Chattanooga	3.90	4.05	4.05	3.85	3.85	5.80	3.80	....	4.40
Tulsa, Okla.	4.64	4.79	4.79	4.59	4.59	6.19	4.54	....	5.54
Birmingham, Ala.	3.50	3.65	3.65	3.45	3.45	5.83	3.40	....	4.75
New Orleans	4.10	4.65	4.65	4.00	4.00	5.95	4.25	....	5.15
Houston, Tex.	3.50	5.85	6.25	4.05	4.05	5.65	4.20	....	5.25
Seattle	4.30	4.50	5.85	4.05	4.15	5.90	4.20	....	5.50
Portland, Oreg.	4.30	4.70	6.10	4.15	4.15	5.90	3.75	6.50	4.75
Los Angeles	4.00	4.50	6.35	4.00	4.00	6.20	4.20	6.30	5.05
San Francisco	4.05	4.45	6.00	3.85	3.95	5.45	4.00	6.40	5.15

	Cold Rolled Strip	Cold Finished Bars	SAE Hot-rolled Bars (Unannealed): 1035-1050	2300 Series	3100 Series	4100 Series	6100 Series	SAE Cold Drawn Bars: 2300	3100
Boston	3.61	4.43	4.28	7.65	6.25	6.00	8.05	8.73	7.33
New York	3.66	4.39	4.14	7.50	6.10	5.85	....	8.69	7.29
Philadelphia	3.66	4.36	3.85	7.46	6.06	5.81	8.71	....	....
Baltimore	....	4.35	3.95	....	....	....	....	....	....
Norfolk, Va.	....	4.60	....	....	....	....	....	....	....
Buffalo	3.57	4.05	3.80	7.25	5.85	5.60	7.65	8.25	6.85
Pittsburgh	3.35	3.95	3.80	7.35	5.95	5.70	7.75	8.35	6.95
Cleveland	3.35	4.05	3.70	7.45	6.05	6.05	7.85	8.25	6.85
Detroit	3.55	4.10	3.83	7.57	6.17	5.92	7.39	8.55	7.15
Cincinnati	3.60	4.30	3.90	7.59	6.19	5.94	8.99	8.60	7.20
Chicago	3.65	4.05	3.80	7.25	5.85	5.60	7.65	8.25	6.85
Minneapolis	....	4.64	4.00	7.60	6.20	8.79	9.34	8.94	7.54
Milwaukee	....	4.18	3.93	7.48	6.08	5.83	7.88	8.48	7.08
St. Louis	3.76	4.32	4.07	7.62	6.22	5.97	8.02	8.62	7.22
Kansas City	4.46	4.60	....	....	....	....	....	....	....
Memphis	....	4.61	....	....	....	....	....	....	....
Chattanooga	....	4.90	....	....	....	....	....	....	....
Tulsa, Okla.	....	5.09	....	....	....	....	....	....	....
Birmingham, Ala.	....	4.73	....	....	....	....	....	....	....
New Orleans	5.00	5.10	....	....	....	....	....	....	....
Seattle	....	5.60	5.65	....	7.80	7.65	8.45	....	....
Portland, Oreg.	....	5.60	6.10	9.00	8.00	7.85	8.70	....	....
Los Angeles	4.45	6.60	4.65	9.40	8.55	8.40	9.05	10.40	9.55
San Francisco	*9.30	6.55	5.20	9.65	8.80	8.65	9.30	10.65	9.80

* Based on minimum quantity.

CURRENT IRON AND STEEL PRICES OF EUROPE

Dollars at Rates of Exchange, Nov. 24

Export Prices f. o. b. Port of Dispatch—

By Cable or Radio

	British gross tons U. K. ports £ s d	Continental Channel or North Sea ports, gross tons: Quoted in dollars at current value	**Quoted in gold pounds sterling £ s d
Foundry, 2.50-3.00 Si.	$25.63 5 10 0	$18.00	2 2 0
Basic bessemer	....	16.50	1 18 6
Hematite, Phos. .03-.05	30.29 6 10 0*	.....	.....
Billets	$36.70 7 17 6	$42.85	5 0 0
Wire rods, No. 5 gage	52.54 11 5 6	43.92	5 2 6
Standard rails	$47.18 10 2 6	$49.28	5 15 0
Merchant bars	2.29c 11 0 0	2.00c to 2.05c	5 2 6 to 5 5 0
Structural shapes	2.21c 10 12 6	1.90c	4 17 6
Plates, †¼ in. or 5 mm.	2.41c 11 11 3	2.19c to 2.39c	5 12 6 to 6 2 6
Sheets, black, 24 gage or 0.5 mm.	2.70c 13 0 0	3.02c	7 15 0°
Sheets, gal., 24 ga., corr.	3.28c 15 15 0	3.51c	9 0 0
Bands and strips	2.76c 13 5 0	2.15c	5 10 0
Plain wire, base	4.06c 19 10 0	2.39c to 2.83c	6 2 6 to 7 5 0
Galvanized wire, base	4.84c 23 5 0	3.07c to 3.17c	7 17 6 to 8 2 6
Wire nails, base	3.85c 18 10 0	2.73c to 2.93c	7 0 0 to 7 10 0
Tin plate, box 108 lbs.	$ 4.72 1 0 3	.....	.....

British ferromanganese $92.50 delivered Atlantic seaboard duty-paid.

Domestic Prices at Works or Furnace—

Last Reported

	£ s d	French Francs		Belgian Francs		Reich Mark
Fdy. pig iron, Si.2.5	$25.40 5 9 0(a)	$15.61	598	$16.90	500	$25.22 63
Basic bess. pig iron	23.30 5 0 0(a)	.....	.....	.....	.....	27.82 (b)69.50
Furnace coke	6.41 1 7 6	5.35	205	7.27	215	7.61 19
Billets	36.70 7 17 6	21.92	840	29.07	850	38.63 96.50
Standard rails	2.11c 10 2 6	1.38c	1,150	2.05c	1,375	2.38c 132
Merchant bars	2.54c 12 4 0††	1.30c	1,080	1.65c	1,100	1.98c 110
Structural shapes	2.29c 11 0 6††	1.27c	1,055	1.65c	1,100	1.93c 107
Plates, †¼-in. or 5 mm.	2.44c 11 14 3††	1.62c	1,350	2.05c	1,375	2.29c 127
Sheets, black	3.28c 15 15 0§	1.92c	1,600‡	2.36c	1,575‡	2.59c 144‡
Sheets, galv., corr., 24 ga. or 0.5 mm.	3.85c 18 10 0	2.70c	2,250	4.13c	2,750	6.65c 370
Plain wire	4.06c 19 10 0	1.98c	1,650	2.48c	1,650	3.11c 173
Bands and strips	2.69c 12 19 0††	1.45c	1,210	1.95c	1,300	2.29c 127

*Basic. †British ship-plates. Continental, bridge plates. §24 ga. ‡1 to 3 mm. basic price. British quotations are for basic open-hearth steel. Continent usually for basic-bessemer steel. (a) del. Middlesbrough. 5s rebate to approved customers. (b) hematite. °Close annealed. ††Rebate of 15s on certain conditions.

**Gold pound sterling carries a premium of 76 per cent over paper sterling.

—The Market Week—

IRON AND STEEL SCRAP PRICES

Corrected to Friday night. Gross tons delivered to consumers, except where otherwise stated; † indicates brokers prices

HEAVY MELTING STEEL

Birmingham, No. 1.	†12.00
Bos. dock No. 1 exp.	13.00-13.25
New Eng. del. No. 1	13.00
Buffalo, No. 1	14.00-14.50
Buffalo, No. 2	12.00-12.50
Chicago, No. 1	14.50-15.00
Chicago, auto, no alloy	13.50-14.00
Chicago, No. 2 auto	11.50-12.00
Cincinnati, dealers	11.75-12.25
Cleveland, No. 1	13.50-14.00
Cleveland, No. 2	12.50-13.00
Detroit, No. 1	10.00-10.50
Detroit (industrial)	10.75-11.25
Eastern Pa., No. 1	14.50-15.00
Eastern Pa., No. 2	12.50-13.00
Federal, Ill.	12.50-13.00
Granite City, R. R.	13.25-13.75
Granite City, No. 2	12.25-12.75
Los Angeles, No. 1	13.50-14.00
Los Angeles, No. 2	12.50-13.00
N. Y. dock No. 1 exp.	11.50-12.00
Pitts., No. 1 (R.R.)	16.00-16.50
Pittsburgh, No. 1	15.50-16.00
Pittsburgh, No. 2	14.50-15.00
St. Louis, R. R.	13.25-13.75
St. Louis, No. 2	12.25-12.75
San Francisco, No. 1	12.00
Seattle, No. 1	10.00-12.00
Toronto, dirs. No. 1	10.00-11.00
Valleys, No. 1	14.50-15.00

COMPRESSED SHEETS

Buffalo	12.00-12.50
Chicago, factory	13.75-14.25
Chicago, dealer	12.75-13.25
Cincinnati, del.	11.25-11.75
Cleveland	13.00-13.50
Detroit	11.75-12.25
E. Pa., new mat.	14.50-15.00
E. Pa., old mat.	10.50-11.00
Los Angeles	12.50-13.00
Pittsburgh	15.50-16.00
St. Louis	11.00-11.50
Valleys	14.00-14.50

BUNDLED SHEETS

Buffalo, No. 1	12.00-12.50
Buffalo, No. 2	11.00-11.50
Cleveland	10.00-10.50
Los Angeles	14.00
Pittsburgh	14.50-15.00
St. Louis	8.00- 8.50
Toronto, dealers	4.00

SHEET CLIPPINGS, LOOSE

Chicago	9.00- 9.50
Cincinnati, dealers	7.00- 7.50
Detroit	8.75- 9.25
†Los Angeles	3.75- 4.00
St. Louis	7.50- 8.00

BUSHELING

Buffalo, No. 1	12.00-12.50
Chicago, No. 1	13.25-13.75
Cincin., No. 1, deal.	8.25- 8.75
Cincinnati, No. 2	3.25- 3.75
Cleveland, No. 2	7.25- 7.75
Detroit, No. 1, new	10.00-10.50
Valleys, new, No. 1	13.50-14.00
Toronto, dealers	4.00

MACHINE TURNINGS (Long)

Birmingham	†4.50- 5.00
Buffalo	7.00- 7.50
Chicago	7.75- 8.25
Cincinnati, dealers	5.00- 5.50
Cleveland	7.00- 7.50
Detroit	5.75- 6.25
Eastern Pa.	8.50- 9.00
Los Angeles	4.00- 4.25
New York	†3.50- 4.00
Pittsburgh	9.75-10.25
St. Louis	5.00- 5.50
Toronto, dealers	4.25- 4.75
Valleys	8.50- 9.00

SHOVELING TURNINGS

Buffalo	8.50- 9.00
Cleveland	7.50- 8.00
Chicago	9.00- 9.50
Detroit	6.75- 7.25
Pitts., alloy-free	10.50-11.00

BORINGS AND TURNINGS

For Blast Furnace Use

Boston district	2.00
Buffalo	7.25- 7.50
Cincinnati, dealers	4.50- 5.00
Cleveland	7.50- 8.00
Eastern Pa.	6.50- 7.00
Detroit	5.75- 6.25
New York	†2.50- 3.00
Pittsburgh	8.25- 8.75
Toronto, dealers	3.50

AXLE TURNINGS

Boston district	†7.50
Buffalo	9.50-10.00
Chicago, elec. fur.	14.00-14.50
East. Pa., elec. fur.	13.00-13.50
St. Louis	9.00- 9.50
Toronto	5.00

CAST IRON BORINGS

Birmingham	†6.00- 6.50
Boston dist. chem.	†6.00- 6.25
Buffalo	8.00- 8.50
Chicago	5.50- 6.00
Cincinnati, dealers	4.50- 5.00
Cleveland	7.25- 7.75
Detroit	5.75- 6.25
E. Pa., chemical	10.00-11.00
New York	†3.50- 4.00
St. Louis	2.00- 3.00
Toronto, dealers	3.50

RAILROAD SPECIALTIES

Chicago	16.25-16.75

ANGLE BARS—STEEL

Chicago	16.50-17.00
St. Louis	15.00-15.50

SPRINGS

Buffalo	16.00-16.50
Chicago, coil	17.50-18.00
Chicago, leaf	16.00-16.50
Eastern Pa.	16.50-17.00
Pittsburgh	16.75-17.25
St. Louis	15.50-16.00

STEEL RAILS, SHORT

Birmingham	†12.00-12.50
Buffalo	17.00-17.50
Chicago (3 ft.)	16.50-17.00
Chicago (2 ft.)	17.00-17.50
Cincinnati, dealers	17.00-17.50
Detroit	16.50-17.00
Los Angeles	15.00-17.50
Pitts., 3 ft. and less	16.75-17.25
St. Louis, 2 ft. & less	15.00-15.50

STEEL RAILS, SCRAP

Boston district	†13.50-14.00
Buffalo	16.00-16.50
Chicago	14.50-15.00
Cleveland	17.00-17.50
Pittsburgh	16.25-16.75
St. Louis	14.00-14.50
Seattle	16.00

FROGS, SWITCHES

Chicago	14.50-15.00
St. Louis, cut	14.25-14.75

ARCH BARS, TRANSOMS

St. Louis	14.50-15.00

PIPE AND FLUES

Chicago, net	9.50-10.00
Cincinnati, dealers	7.00- 7.50

RAILROAD GRATE BARS

Buffalo	10.00-10.50
Chicago, net	9.00- 9.50
Cincinnati, dealers	7.00- 7.50
Eastern Pa.	13.50
New York	†8.50- 9.00
St. Louis	9.00- 9.50

RAILROAD WROUGHT

Birmingham	†11.00-11.50
Boston district	†9.50-10.00
Eastern Pa., No. 1	15.00-15.50
St. Louis, No. 1	10.75-11.25
St. Louis, No. 2	13.25-13.75
Toronto, No. 1 dlr.	10.00

FORGE FLASHINGS

Boston district	†7.75- 8.00
Buffalo	12.00-12.50
Cleveland	11.50-12.00
Detroit	9.50-10.00
Los Angeles	9.00
Pittsburgh	14.50-15.00

FORGE SCRAP

Boston district	†6.50
Chicago, heavy	16.50-17.00

LOW PHOSPHORUS

Buffalo, crops	16.50-17.00
Cleveland, crops	18.00-18.50
Eastern Pa., crops	16.50-17.00
Pitts., billet, bloom, slab crops	18.50-19.00

LOW PHOS. PUNCHINGS

Buffalo	15.50-16.00
Chicago	16.00-16.50
Eastern Pa.	17.00-17.50
Pittsburgh	17.25-17.75
Seattle	15.00

RAILS FOR ROLLING

5 feet and over

Birmingham	†14.00-15.00
Boston	15.00-15.50
Chicago	17.50-18.00
New York	†15.00-15.50
Eastern Pa.	17.00-17.50
St. Louis	18.00-18.50

STEEL CAR AXLES

Birmingham	†15.00-16.00
Buffalo	16.50-17.00
Boston district	†16.00
Chicago, net	19.50-20.00
Eastern Pa.	21.50-22.50
St. Louis	18.50-19.00

LOCOMOTIVE TIRES

Chicago (cut)	16.00-16.50
St. Louis, No. 1	13.50-14.00

SHAFTING

Boston district	†14.75-15.00
New York	†15.00-15.50
Eastern Pa.	19.50-20.00
St. Louis, 1¼-3¾"	17.00-17.50

CAR WHEELS

Birmingham	†13.50-14.00
Boston dist., iron	†11.00
Buffalo, steel	16.50-17.00
Chicago, iron	14.00-14.50
Chicago, rolled steel	15.50-16.00
Cincin., iron, deal.	14.00-14.50
Eastern Pa., iron	16.50-17.00
Eastern Pa., steel	16.50-17.00
Pittsburgh, iron	15.00-15.50
Pittsburgh, steel	16.75-17.25
St. Louis, iron	14.00-14.50
St. Louis, steel	15.00-15.50

NO. 1 CAST SCRAP

Birmingham	†12.50-13.00
Boston, No. 1 mach.	†11.00-11.50
N. Eng. del. No. 2	12.00-12.50
N. Eng. del. textile	12.50-13.00
Buffalo, cupola	14.50-15.00
Buffalo, mach.	15.50-16.00
Chicago, agri. net	11.00-11.50
Chicago, auto net	12.50-13.00
Chicago, railr'd net	11.50-12.00
Chicago, mach. net	12.50-13.00
Cincin., mach. deal.	13.50-14.00
Cleveland, mach. net	16.75-17.25
Eastern Pa., cupola	16.50-17.00
E. Pa., mixed yard	14.00-14.50
Los Angeles, net	13.50-14.00
Pittsburgh, cupola	15.25-15.75
San Francisco, del.	13.50-14.00
Seattle	10.00-12.00
St. Louis, cupola	12.50-13.00
St. L., agr. mach.	12.75-13.25
St. L., No. 1 mach.	14.00-14.50
Toronto, No. 1, mach., net	11.00-12.00

HEAVY CAST

Boston dist. break.	†10.75-11.00
New England, del.	12.50-13.00
Buffalo, break.	11.00-11.50
Cleveland, break. net	13.00-13.50
Detroit, auto net	12.50-13.00
Detroit, break	9.50-10.00
Eastern Pa.	16.00
Los Ang., auto, net	13.00-13.50
New York, break.	†11.50-12.00
Pittsburgh, break.	13.25-13.75

STOVE PLATE

Birmingham	†7.50- 8.00
Boston district	†8.00- 8.25
Buffalo	13.00-13.50
Chicago, net	8.50- 9.00
Cincinnati, dealers	7.00- 7.50
Detroit, net	8.50- 9.00
Eastern Pa.	13.50
New York, fdy.	†10.00-10.50
St. Louis	8.00- 8.50
Toronto dealers, net	7.50- 8.00

MALLEABLE

Birmingham, R. R.	†10.50-11.00
New England, del.	14.50-15.00
Buffalo	13.50-14.00
Chicago, R. R.	15.00-15.50
Cincin., agri. deal.	12.00-12.50
Cleveland, rail	15.00-15.50
Eastern Pa., R. R.	15.50-16.00
Los Angeles	17.50-18.00
Pittsburgh, rail	14.25-14.75
St. Louis, R. R.	12.00-13.00

Iron Ore

Lake Superior Ore

Gross ton, 51½% Lower Lake Ports

Old range bessemer	$5.25
Mesabi nonbess.	4.95
High phosphorus	4.85
Mesabi bessemer	5.10
Old range nonbess.	5.10

Eastern Local Ore

Cents, unit, del. E. Pa.

Foundry and basic 56.63% con.	9.00-9.25
Cop.-free low phos. 58-60%	nominal

Foreign Ore

Cents per unit, c.i.f. Atlantic

Foreign manganiferous ore, 45.55% iron, 6-10% man. nom.	12.00
No. Afr. low phos.	13.00
Swedish low phos.	13.00
Spanish No. Africa basic, 50 to 60% nom.	9.00
Tungsten. sh. ton. unit, duty pd. nom.	$21.00
N. F., fdy., 55%	7.00
Chrome ore, 48% gross ton, c.i.f.	$23.00-24.00
Molybdenum ores sulphide, per lb. molybdenum contained, f.o.b. mill	0.75

Manganese Ore

Prices not including duty, cents per unit cargo lots.

Caucasian, 50-52% nom.	30.00-32.00
So. African, 50-52% nom.	30.00-32.00
Indian, 50-52%	Nominal

Sheets

Sheet Prices, Page 70

Pittsburgh — Other sheet consumers are beginning to reflect the activity of the automotive industry. Inquiries are increasing, although effects of the inventory period are apparent in some orders which are specified for shipment after Jan. 1. Automotive releases are heavier than expected, indicating the likelihood of new buying within the next few weeks. Sheet production is gaining, the rate on common and full finished material for the nation being up several points to about 65 per cent. Galvanized output still is dropping slowly, being around 60 per cent, as the season is restricting jobber demand in rural districts.

Cleveland—New business in sheets this month, while well below October, is somewhat ahead of expectations. Apparently, not all consumers estimated their requirements fully when forward buying accompanied recent price weakness. Finishing mills continue near-capacity operations, with no letdown in prospect the next two or three weeks, at least. Prices are firm, but higher quotations next quarter are thought unlikely, since miscellaneous demand has not improved sufficiently to support an increase, according to some intimations.

Chicago—Still influenced by forward buying a short time ago, sheet bookings are small both in number and tonnage. Production remains heavy, however, as backlogs have extended deliveries in some instances to six or seven weeks. Some increase in miscellaneous buying is looked for before the end of the quarter.

Boston—With most large sheet buyers covered for the remainder of the year, buying is confined to small fill-in lots, but releases are steady. Sustained consumption is expected to result in smaller inventories in users' hands than a year ago. Mill prices are steady.

New York—While sheet deliveries this month will show an improvement over October, volume has leveled off somewhat recently. This is generally regarded as a seasonal development, although a bit disappointing to sellers as trade sentiment continues optimistic as to prospects over the next several weeks. New orders this month will fall substantially under October bookings, due to anticipatory buying at the time sharp concessions were generally prevalent.

Approximately 100 tons of rolled steel forms and sheets will be required for metal casement windows for Queensbridge housing projects, placed through Seaboard Steel Products Corp., New York, with Thorne Window Co., Philadelphia.

Philadelphia — Sheet movement continues brisk to automotive interests but is only moderate in other directions. Additional miscellaneous business at full prices is being placed against requirements previously not anticipated. Galvanized sheets are moving fairly well through warehouses.

Buffalo — Steady releases from automotive interests and moderate gains in miscellaneous demand are sustaining sheet production at the best rate in many months. New business generally is for early shipment which mills generally are able to grant.

Cincinnati—Sustained sheet mill operations are assured the remainder of the year, new business having added a surprisingly large tonnage to backlogs accumulated during the recent price dip. New orders prior to the holiday were well above 50 per cent of district capacity. Mills are accepting business only for delivery to Jan. 1, pending announcement of first quarter prices.

St. Louis—Sheet releases and new business show further gains, with production the best for the year to date. Galvanized roofing material is moving satisfactorily to southern and southwestern states.

Birmingham, Ala.—No reduction in output of sheets is noted continuing, both here and at Gadsden, on virtually a 100 per cent basis.

Strip

Strip Prices, Page 71

Pittsburgh—With strip releases continuing heavy, production again has advanced, both hot and cold rolled divisions being close to 60 per cent, with the latter still slightly more active.

Boston—New business in narrow cold strip has tapered slightly, being well below shipments. However, consumption is steady or heavier. With fair tonnages on order and users attempting to keep down inventories, buying does not fully reflect the rate at which stocks are being reduced. Rerollers are operating close to 75 per cent in most instances. Prices are steady.

New York—While cold strip consumption appears to be holding, new buying has declined slightly, with releases against orders less active. Shipments continue heavy, although most consumers are expected to enter the new year with balanced inventories. The bulk of recent forward tonnages will have been well worked off by Jan. 1. Competition with slit sheets remains keen. Hot-rolled buying has slumped, with rerollers taking deliveries against old orders in good volume.

Birmingham, Ala.—Except for occasional output of cotton ties for stock, production of strip is virtually at a standstill.

Plates

Plate Prices, Page 70

Pittsburgh — Plate tonnages are small, with some business received for barge and ship building. Plates are moving slowly for structural work. Government orders for armor plate are aiding operations here slightly.

Cleveland — Plate demand from miscellaneous sources shows little change, but inquiries are slightly more active. In the absence of backlogs delivery within a week to ten days is available. Plate needs in public construction work are counted on to bolster demand during December.

Chicago — Plates are in fair demand for structural work, while some improvement in railroad needs is indicated by the appearance of several freight car buying programs. Little tonnage will be required in local subway construction.

Boston — Shipyard requirements are outstanding in a somewhat listless plate market, with bids closing on several thousand tons of steel, mostly plates, for district navy yards. Several hundred tons are involved in pending water tanks, but oil storage demand is quiet. Plate mills lost an estimated 1200 tons of business in the placing with Lock Joint Pipe Co. of two 102-inch siphons for water crossings at Wayland and Framingham, Mass. Occasional price shading on navy purchases is noted.

New York — Plate buying continues disappointing, but the outlook is better. Shipbuilding offers the most promising source of new business, prospects being aided by the placing of three battleships by the navy, two with private builders and one with a government yard. Railroad releases for equipment repairs are slightly heavier, while the freight car market is more active. Illinois Central has placed an additional 1000 steel box cars, Norfolk & Western is in the market for 1500 hopper cars and 600 steel box cars and the Wheeling & Lake Erie plans to buy 400 hopper cars. Oil company and public utility buying of plates is limited to small lots for maintenance work.

About 21,000 tons of hull steel,

mostly plates, will be required for six cargo boats placed by the United States maritime commission with Federal Shipbuilding & Dry Dock Co., subsidiary of United States Steel Corp. The remaining six boats figured on by the commission are not expected to be acted on at this time, but nine other merchant vessels on which bids were taken Nov. 1 and Nov. 10 are thought likely to be placed before the end of the year, bringing total 1938 placements to 52.

Philadelphia — The government maritime commission is considering the purchase of vessels of the C-1 type, which is smaller than the C-2 and C-3 boats already placed, but no date for bids has been set. Shipbuilders are placing a few small lots against ships on contract but are slow to get under way on the C-3 boats. Baltimore & Ohio is taking a small tonnage of plates for repair work, but other roads are buying little. Pennsylvania railroad still has about 375 tons to buy for 25 tenders.

Birmingham, Ala. — Due to railroad business booked several weeks ago and some upturn in scattered buying from miscellaneous sources, plate output remains consistently active with the production at around 60 per cent.

San Francisco — Interest in the plate market centers around opening of bids Dec. 12 for close to 10,000 tons for a 21 to 37-inch welded steel or lock-joint steel pipe line 7.2 miles in length for the metropolitan water district, Los Angeles. Bids have just been opened at Washington, for 1504 tons of plates, sheets and strip, under schedule 4897, for the construction of the USS MONSSEN at the Bremerton, Wash., navy yard and on 1280 tons of the same class of material for the construction of the USS TUNA at the navy yard, Mare Island, Calif. Awards aggregated 1700 tons and brought the total for the year to 40,082 tons as compared with 59.972 tons for the corresponding period in 1937.

Seattle — Richfield Oil Co. plans construction of six large storage tanks at Seattle, involving 1000 tons, and bids from selected firms are under consideration. Albina Iron Works, Portland, Oreg., has the contract at $283,000 to convert the steamer PACIFIC SPRUCE into a cannery tender. The job involves 125 tons of plates and 25 tons of shapes. Steel Tank & Pipe Co., Portland, is low to United States engineer for construction of a 10,000-barrel storage tank at Empire, Oreg., calling for 50 tons of plates.

Plate Contracts Placed

500 tons, barge for Panama Canal, schedule 3389, to United States Steel Products Co., New York.

375 tons, standpipe, Washington suburban sanitary commission, Bradley Hills, Md., to Chicago Bridge & Iron Co., Chicago.

200 tons, 1,000,000-gallon elevated tank, Owensboro, Ky., to Pittsburgh-Des Moines Steel Co., Pittsburgh.

100 tons, tanks, Indian Service, Dixon, Mont., and Elbowoods, N. Dak, to Chicago Bridge & Iron Co., Chicago, $9250 and $8985 respectively; bids Sept. 21.

Plate Contracts Pending

10,000 tons, 21 to 37-inch welded steel or lock-joint steel pipe, metropolitan water district, Los Angeles, specification 293; bids Dec. 12.

1000 tons, six oil storage tanks at Seattle for Richfield Oil Co.; bids in.

400 tons, steel shells for piers, four girder bridges and two smaller bridges, Cape May, N. J.; bids Dec. 15, Cape May bridge commission; Ash, Howard, Needles and Tammen, New York, consulting engineers.

193 tons, United States engineer, Memphis, Tenn.; also 96 tons, structural steel; pro. 126F, bids Nov. 22.

Unstated tonnage, 100,000-gallon elevated tank, veterans' hospital, Dallas, Tex.; bids Dec. 20.

Bars

Bar Prices, Page 70

Pittsburgh—Merchant bar bookings are steady, a substantial increase in diversified business offsetting the temporary slack in automotive orders. Motor car interests, however, continue to take most shipments against old purchases. Backlogs of automotive tonnage are being worked off, resulting in an excess of production over new business. Fair demand continues from partsmakers though in smaller volume than initial purchases. Prices are steady.

Cleveland—Carbon and alloy steel bar demand continues to improve slowly, with automotive partsmakers largely responsible for recent betterment in new business. Further gain in orders from the latter are expected within the next 30 days, when many interests will have worked off heavy banks of finished parts accumulated in previous months.

Boston—Government buying leads in improved demand for alloy bars. By lot, Timken Roller Bearing Co. has been awarded 170 tons, hot-rolled nickel steel bars for Boston navy yard at 4.66c, delivered, while 105 tons went to Youngstown Sheet & Tube Co. at 4.61c. Carbon bar buying holds recent gains and forging bar needs of small tool, airplane and automotive interests are moderately heavier. Cold-finished bar orders are improving gradually.

New York—Commercial bar buying is barely being sustained. The past several days have seen a check in the improvement noted earlier in the month. This is attributed in part to approaching inventory season although it is the general opinion that consumers have no large tonnage on hand. Releases by government shops and automotive accessory manufacturers are contributing most to the current volume, particularly in cold-drawn and alloy bars.

Philadelphia — Demand from small forging shops have increased less than was anticipated, but needs of automotive partsmakers continue active. Little business is looked for from farm equipment builders before January. Machine tool interests are quiet.

Buffalo — Sustained business is made up largely of miscellaneous orders. A small gain is noted in automotive buying, but railroad purchases continue to lag. Production holds at 55 to 60 per cent.

Birmingham, Ala.—Long expected business from manufacturers of agricultural implements has materialized, definitely increasing output of bars in the South. Production figures currently stand at slightly better than 60 per cent.

Pipe

Pipe Prices, Page 71

Pittsburgh—Pipe activity is retarded somewhat by the season, though reductions in business so far have been slight. The decline principally is in standard black and galvanized pipe, but pressure to start various government-financed projects before Jan. 1 is expected to temper the usual slowing down in construction work with the advent of cold weather. Automotive releases of mechanical tubing are ahead of schedule, pointing to new buying before the end of the quarter. Improvement in railroad demand is slight, movement of oil country goods steady.

Cleveland—Steel pipe shipments from jobbers' stocks so far in November are moderately heavier than a month ago. Municipal work, aided by federal grants, has been the largest source of demand the past 60 days, although most such business has involved cast pipe. Largest of new inquiries is 400 tons of steel or 900 tons of cast pipe for extensions to a water distribution system at Akron, O., bids Dec. 1.

Chicago—Cast pipe sellers are busier than usual with numerous PWA projects such as sewage disposal systems, waterworks and other work taking varying tonnages. Stipulation that federal-financed projects

must start before Jan. 1 has resulted in a flood of pipe inquiries. Private construction, currently overshadowed by public work, is expected to be more prominent late next month as PWA needs lessen.

Boston—Cast pipe buying and inquiry has increased, the latter including 1255 tons for Hamilton, Mass. Some business has gone to concrete and steel pipe, such as several hundred tons of the latter for Wolfeboro, N. H. The district foundry continues operating a full five-day week. Merchant steel pipe buying is slightly heavier but with few large individual purchases. Resale prices are steady.

New York — Oil company demand and automotive needs are principal sustaining factor in the steel pipe market. The former is largely for miscellaneous maintenance and drilling work. Six cargo boats placed recently by the United States maritime commission will take 600 to 700 tons of boiler tubing. A fairly large pipe tonnage still is pending for local housing projects.

Birmingham, Ala.—Pipe plants report some new scattered lettings during the past week, none large individually, but sufficient in the aggregate to keep output at the recent rate of approximately 50 per cent.

San Francisco—Little new cast iron pipe business has come into the market of late and awards totaled less than 500 tons. To date 29,542 tons have been placed, compared with 25,893 tons for the same period a year ago.

Seattle — Projects are developing slowly but prospects have improved. Wood pipe is offering keen competition in some instances. Week's awards include 660 tons steel pipe for Coulee dam to Steel & Tubes Inc., Cleveland; about 250 tons cast iron for Rogue River and Jacksonville, Oreg., to Pacific States Cast Iron Pipe Co., Provo, Utah.

Cast Pipe Placed

600 tons, various sizes, Lincoln, Mass., to Warren Pipe Co., Everett, Mass.
250 tons, Rogue River and Jacksonville, Oreg., replacements, to Pacific States Cast Iron Pipe Co., Provo, Utah.
150 tons, 16-inch, Los Angeles, to United States Pipe & Foundry Co., Burlington, N. J.
133 tons, 4 to 12-inch, Modesto, Calif., to United States Pipe & Foundry Co., Burlington, N. J.
100 tons, Martinez, Calif., on inquiry for 231 tons, to United States Pipe & Foundry Co., Burlington, N. J., balance went transite pipe.
100 tons, 8-inch for Twenty-fourth avenue S. W., Seattle, to H. G. Purcell for United States Pipe & Foundry Co., Burlington, N. J.

Steel Pipe Placed

400 tons, mostly 10-inch, Sanbornville, N. H., to Youngstown Sheet & Tube Co., Youngstown, O., through Hagan-Thibideau Co., Wolfboro, N. H., contractor.
150 tons, 1 to 6-inch black and galvanized, for Olympia View district, Edmonds, Wash., to Crane Co., Seattle.
150 tons, caissons, reconstruction, Fourteenth street viaduct, Hoboken, N. J., to National Tube Co., Pittsburgh; George M. Brewster & Son Inc., Bogota, N. J., general contractor.

Cast Pipe Pending

900 tons, 770 feet of 30-inch and 6000 feet of 24-inch, replacement work for water distribution system, Akron, O.; bids Dec. 1, alternate of steel pipe for same project.
300 tons, Sweet Home, Oreg.; bids in, awaiting PWA approval.
275 tons, 4 to 8-inch classes 150 to 250, city of Seattle; bids Nov. 29.

Wire

Wire Prices, Page 71

Pittsburgh — Wire production is well sustained, the national rate being estimated about 65 per cent. Automotive releases are heavier than anticipated, and renewed buying from that direction is expected before the end of the quarter. Jobber orders exceed previous estimates. Demand for merchant products, while off seasonally, is holding well in the South, while business from northern districts has declined less than was anticipated. Maintenance of fairly active construction work through the winter will aid nail demand.

Cleveland—Wire demand is steady, with activity in manufacturers' material well ahead of that in merchant items. Deliveries range from about two weeks on bright basic wire to three or four weeks on spring wire and other specialties. Automotive needs furnish the largest single outlet for local production, and are counted on for further expansion the remainder of the year. Heavier buying in merchant products is not expected until early 1939. Prices are firm.

Chicago — Demand for wire and wire products is easing off slightly as users begin to prepare for entering the new year with light inventories. Merchant products particularly have been affected, although automotive demand is still at a consistent rate. The decline has been small, but no upward trend is now expected to appear until next quarter.

Wheeling Corrugating Co. has been awarded 240,000 square feet, wire mesh, at $1.75 per 100 square feet, f.o.b. Mondamin, Iowa. Material is 72 inches wide in 300-foot rolls and was bid Oct. 24, to United States engineer, Omaha, Nebr.

Boston—Wire shipments continue heavy, but a dip has appeared in buying and releases. Operations in most departments are active, bettering 75 per cent in some. Aggregate volume this month compares favorably with October with a few mills falling slightly below. Deliveries are ahead of incoming volume with most consumers releasing tonnage more conservatively as inventory period approaches. Prices are well maintained.

New York — Orders and specifications have slowed down mildly, although shipments are sustained, with pressure for delivery noted on some products, notably flat material. Shipments are also expected to slacken shortly as the year-end inventory period approaches, although consumption is generally maintained. Wire mill finishing departments in some instances are operating 75 to 80 per cent of capacity.

Birmingham, Ala.—Wire output holds persistently to the general level reached a few weeks ago and now stands at better than 60 per cent.

Rails, Cars

Track Material Prices, Page 71

Volume of car inquiry and buying is increasing. Illinois Central has placed 1000 box on lease-purchase plan with American Car & Foundry Co., duplicating its order placed in September. Norfolk & Western is inquiring for 1500 steel hoppers and 600 box cars. Paulista Railway, Brazil, is reported to have placed 250 freight car underframes with American Car & Foundry Co.

The Norfolk & Western cars are estimated to require about 31,000 tons of steel, including wheels and axles and the box cars for the Illinois Central 15,000 tons, a total of 46,000 tons.

Public service board of St. Louis will receive bids Dec. 18 for an interlocking and signaling installation for the railroad deck of the Municipal bridge over the Mississippi, to cost an estimated $336,000, of which $151,000 is PWA grant.

Tennessee Coal, Iron and Railroad Co., Birmingham, Ala., starts its rail mill at Ensley, Ala., today on a small backlog of rails.

Louisville & Nashville has placed 17,280 tons of 100-pound rails with Tennessee Coal, Iron & Railroad Co., Birmingham, Ala., accessories to be placed later.

Cars Placed

Cornwall railroad, 20 all-steel ore cars, 75 tons capacity, to Bethlehem Steel

Co., Bethlehem, Pa.

Illinois Central, 1000 fifty-ton steel box cars, to American Car & Foundry Co., New York, on lease-purchase plan; cars identical with 1000 placed in September with same builder.

Paulista Railway, Brazil, 250 steel freight car underframes, to American Car & Foundry Co., New York.

Rails Placed

Louisville & Nashville, 17,280 tons 100-pound rails, to Tennessee Coal, Iron & Railroad Co., Birmingham, Ala., accessories to be placed later.

Cars Pending

Norfolk & Western, 1500 forty-five-ton steel hopper cars, bids Dec. 13; 600 all-steel box cars, bids Dec. 15.

Buses Booked

American Car & Foundry Motors Co., New York; Five for Fort Worth Transit Co., Fort Worth, Tex.; four for Jersey City & Montclair Bus Co., Verona, N. J.; three for Boston, Worcester & New York Street Railway Co., Boston; two for Florida Motor Lines, Jacksonville, Fla.; three for Gary Railways Co., Gary, Ind.

Shapes

Structural Shape Prices, Page 70

New York — Structural steel contracts are down to approximately 3500 tons, including two schools, 1700 tons, one at Bloomfield, N. J. Practically all small bridge needs pending have been placed, the outstanding inquiry being for 18,000 tons for a superstructure, Brooklyn, closing Nov. 28. The superstructure, Criminal courts building, New York, 25,000 tons, estimated, is expected out for bids shortly.

Pittsburgh — Appearance of several large inquiries is helping to relieve recent dullness in fabricated shape markets. Largest of new jobs is 1800 tons for technical schools at the government air field, Rantoul, Ill. High schools at Auburn, N. Y., will require 800 tons. Awards continue light, with public works predominating.

Cleveland—Structural awards are lighter than a month ago, with little improvement in immediate prospect. Several large bridges will be up for bids about the middle of December, but only small tonnages are in sight elsewhere. While fairly busy on orders, fabricators are reducing backlogs rapidly. Fabricated prices are slightly firmer but are provided little test.

Chicago — Fabricated shape inquiries and awards were heavier the past week, with bridges predominating. Bridge inquiries include 1780 tons in Oklahoma and 500 tons at Oshkosh, Wis. Two subway stations here involve 700 tons. Awards are topped by 2000 tons for a Brownsville, Nebr., bridge.

Boston — Contract for a movable span bridge, Gardiner-Randolph, Me., 370 tons, went to Lackawanna Steel Construction Corp., Buffalo. Most structural contracts are for small lots. More small stringer bridges are up for figures and public work accounts for the bulk of building construction.

Philadelphia — Pennsylvania general state authority institutional and school program has bogged down, due to lack of PWA funds and there is little chance the situation will be rectified in the near future. Number of public jobs not included in this program are unaffected. State highway commission takes bids Dec. 14 on $375,000 maintenance building, Harrisburg, Pa.

Buffalo — Activity continues to mount and some fabricators are very busy. Scattered among many fair size jobs are several small projects calling for less than 100 tons.

St. Louis — Quiet prevails in the structural market. Fabricating yard operations have declined to 30 per cent of capacity from 35 per cent the past few weeks. New lettings are scarce and small. The only pending job is an auditorium at Topeka, Kans., requiring 500 tons.

Birmingham, Ala.—Some new business in shapes is evident here and at Gadsden with fabricators encouraged over prospects for some increase in privately financed construction. Mills are not much below 60 per cent in production of this material.

San Francisco — Structural awards included 686 tons of H columns for the Santa Ana river bridge near Prado, Calif. First reports from Los Angeles gave American Bridge Co. as low bidder on between 16,000 and 17,000 tons of transmission towers for that city, but a tabulation of the bids shows Bethlehem Steel Co. as low bidder. It is thought that this company will shortly be awarded the project. American Bridge Co. is low bidder on 1000 tons for the third and fourth crossings of the Sacramento river on the Central Valley project, California. Awards totaled 2034 tons, bringing the year's aggregate to 136,981 tons, compared with 137,521 tons last year.

Seattle — While no important awards have been announced, sizable projects developed and are up for bids. Port of Portland will call bids next month for rebuilding ten towers on five pontoons of the 15,000 ton drydock, involving 1250 tons of steel. It will be the largest welding job yet attempted in this area.

Shape Awards Compared

	Tons
Week ended Nov. 26	**18,666**
Week ended Nov. 19	**17,678**
Week ended Nov. 12	**15,503**
This week, 1937	**8,668**
Weekly average, year, 1937	**21,736**
Weekly average, 1938	**20,222**
Weekly average, October	**17,160**
Total to date, 1937	**1,154,710**
Total to date, 1938	**950,421**

Includes awards of 100 tons or more.

Shape Contracts Placed

3000 tons, shop and crane runway, navy yard, Norfolk, Va., to Bethlehem Steel Co., Bethlehem, Pa., $286,700, bids Nov. 16, spec. 8817, bureau of yards and docks.

2000 tons, bridge, Brownsville, Nebr., to Bethlehem Steel Co., Bethlehem, Pa.

1100 tons, ventilation building, Queens side, Midtown tunnel, New York, to Ingalls Iron Works, Birmingham, Ala.; through Cauldwell-Wingate, New York, contractors.

975 tons, bridge, Brazos river, Waller county, Texas, to Virginia Bridge Co., Roanoke, Va.

950 tons, public school 221, Brooklyn, N. Y., to Bethlehem Fabricators, Inc., Bethlehem, Pa., bids Nov. 21, steel direct, fabrication and erection, board of education, New York.

850 tons, school, Bloomfield, N. J., to F. G. Schaefer Iron Works, Edgewater, N. J.

686 tons, H columns, Santa Ana river bridge near Prado, Calif., to unnamed interest.

655 tons, bridge 1730, Dearborn county, Indiana, to Midland Structural Steel Co., Cicero, Ill.

603 tons, bridge, Merrill, Miss., to Vincennes Steel Corp., Vincennes, Ind.

600 tons, building, Seabrook Packing Co., Millville, N. J., to American Bridge Co., Pittsburgh.

582 tons, bridge, McLane, Miss., to Vincennes Steel Corp., Vincennes, Ind.

470 tons, mess hall and school, Norfolk, Va., to Lehigh Structural Steel Co., Allentown, Pa.

420 tons, Port Allen pier, Kauai, T. H., to unnamed interest.

400 tons, biological science building, Lexington, Ky., to International Steel Co., Evansville, Ind.

400 tons, buildings, Lehigh Portland Cement Co., Union Bridge, Md., to Belmont Iron Works, Eddystone, Pa.

370 tons, movable span bridge, Gardiner-Randolph, Me., to Lackawanna Steel Construction Corp., Buffalo; 175 tons, structural steel; 175 tons, steel sheet piling and 20 tons, movable span machinery, bids Nov. 16, state highway commission, Augusta, Max. L. Wilder, bridge engineer.

370 tons, building, Chaison, Tex., to Mosher Steel Co., Houston, Tex.

320 tons, academic building, Ft. Riley, Kans., for United States army, to Omaha Steel Works, Omaha, Nebr.

300 tons, state bridge over Neshaminy creek, Croydon, Pa., to American Bridge Co., Pittsburgh.

295 tons, garage, Green Bus Co., Jamaica, New York, to American Bridge Co., Pittsburgh; through Del Gudio Construction Co., New York.

275 tons, warehouse, Fort Myer, Va., to Fort Pitt Bridge Works, Pittsburgh.

270 tons, hydrogenation building, for Standard Oil Co. of Indiana, Whiting, Ind., to Mississippi Valley Structural Steel Co., Decatur, Ill.

265 tons, Dearborn street bridge repair, Chicago, to Joseph T. Ryerson & Son Inc., Chicago.

230 tons, overhead bridge, Columbia county, Wisconsin, to Duffin Iron Works, Chicago.

200 tons, state highway bridge, North Branch, Md., to Bethlehem Steel Corp., Bethlehem, Pa.

200 tons, repairs to Bloomfield bridge, Pittsburgh, for city, to Levinson Steel Co., Pittsburgh.

160 tons, cupola building and runway, Griffin Wheel Co., Boston, to A. O. Wilson Structural Co., Cambridge, Mass.

160 tons, highway bridge, York, Nebr., to St. Joseph Structural Steel Co., St. Joseph, Mo.

160 tons, addition, Elmira free academy, Elmira, N. Y., to American Bridge Co., Pittsburgh.

155 tons, two incinerators, Cincinnati, to Oregonia Bridge Co., Lebanon, O.

150 tons, schools at Shafter and McFarland, Calif., to Consolidated Steel Corp., Los Angeles.

140 tons, bridge, contract 299, Maverick county, Texas, to Mosher Steel Co., Houston, Tex.

135 tons, Kaweah river bridge, Tulare county, Calif., for state to Bethlehem Steel Co., San Francisco.

135 tons, textile plant, Eleanor, W. Va., to Ingalls Iron Works, Birmingham.

125 tons, state bridge over Northern railroad, East Ely, Nev., to Bethlehem Steel Corp., Bethlehem, Pa.

120 tons, high school, Berkeley Springs, W. Va., to New York Central Iron Works Inc., Hagerstown, Md.

120 tons, parish house, Dutch Reform church, Albany, N. Y., to James McKinney & Son, Albany.

110 tons, city hall, Gardner, Mass., to Haarmann Steel Co., Holyoke, Mass.; through Swanburg Construction Co., Manchester, N. H.

105 tons, central school, Roscoe, N. Y., to Bethlehem Contracting Co., Bethlehem, Pa.

105 tons, high school, Windsor, Vt., to Lehigh Structural Steel Co., Allentown, Pa.

Unstated tonnage, post office, Oregon, Ill., $50,301 contract to Mutual Contracting Co., Chicago, by United States treasury department.

Shape Contracts Pending

16,000 to 17,000 tons, transmission towers, water and power department, Los Angeles, Bethlehem Steel Co., San Francisco, low, earlier reported that American Bridge Co. was low.

15,000 tons, bridge, West Branch, Narragansett Bay, Jamestown, R. I.; preliminary approach contracts out with main bridge bids expected about Dec. 15.

2000 tons, Jackson county, Arkansas, flood wall and railway track reconstruction; bids due Little Rock, Ark., Nov. 29.

2000 tons, 4 fifty-foot bascule span deck plate girder bridges and two smaller bridges, Cape May, N. J.; bids Dec. 15, Cape May bridge commission; Ash, Howard, Needles and Tammen, New York, consulting engineers. Work also includes 1200 tons of steel bearing H-piles.

1780 tons, bridge, Wauika, Okla.

1575 tons, Oceanic bridge, Rumson, N. J.; bids Dec. 9, Ash, Howard, Needles & Tammen, New York, consulting engineers.

1500 tons, U. S. army air corps technical schools Nos. 1 and 2, Chanute Field, Rantoul, Ill.; bids Dec. 1.

1250 tons, 10 steel towers, pontoon drydock; bids to Port of Portland, Oreg., in December.

1000 tons, Jefferson county, Arkansas, drainage distribution; bids due Little

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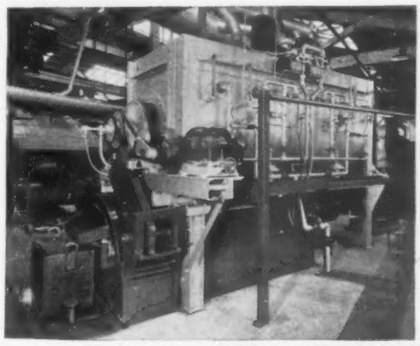

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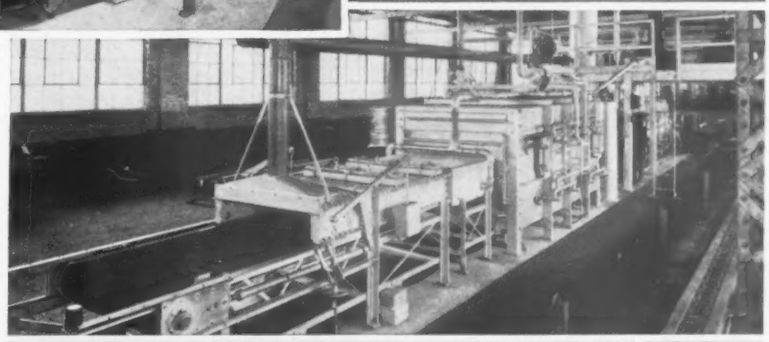

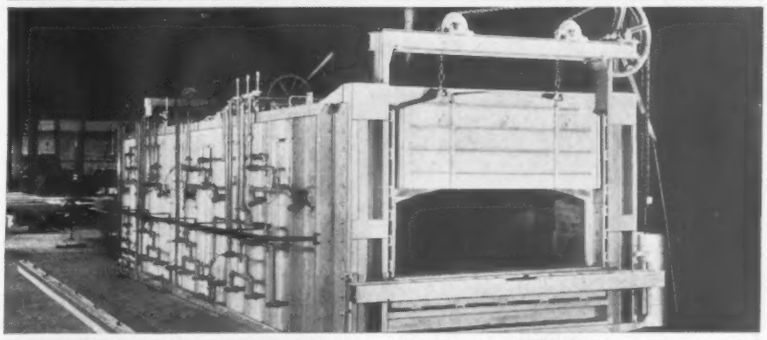

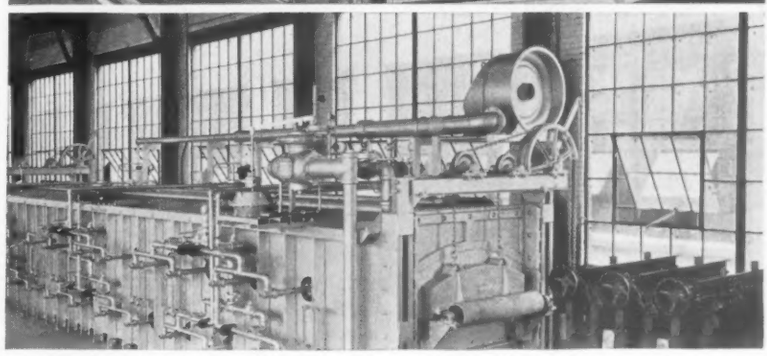

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Window Shopping

■ We have done quite a lot of back-patting on the broad shoulders of Detroit editor A. H. Allen for the splendid job he turns out in Mirrors of Motordom, to the extent of almost neglecting the well padded back of Lynne Lamm who dishes out STEEL's widely read Windows of Washington. STEEL has always been just a step ahead of the industry's needs and since years ago has maintained a resident Washington editor. Sensing the growing importance of governmental activities, and the effect they would have on industry, more emphasis was thrown on Washington news and in June, 1933 Windows of Washington became a regular weekly feature. Mr. Lamm, who has been STEEL's Washington correspondent and editor for more than 11 years, does, as you know, a scintillating job of digesting and interpreting the news. His two pages each week are on a par (or better, some readers think) with the expensive letter services available. Keep your weather eye cocked on the Windows as the coming Congress brings new ideas and a more restrained attitude to Washington. (We hope)

Keep Moving

■ Over in the Pennsylvania hills, where the hunting season is in full swing, they tell of a gentleman farmer whose avocation is being a coal and coke magnate. It seems this fellow is addicted to WPA worker stories, and so he has just posted a freshly painted sign on his hunting lodge which reads: *Shoot Anything You See Moving On This Place, But Don't Shoot Anything That Isn't Moving—It May Be a WPA Worker!*

Found A Lion

■ The November *Link-Belt News* carried a dandy. The chief draftsman of a western mining company received a telegram from one of their warehouses which read: *Found a lion under warehouse, very weak. What shall we do?* Thinking he was being kidded, the chief draftsman showed his own sense of humor by wiring back: *Feed him warm milk!* This caused considerable confusion at the other end, and also an investigation. The upshot was that the telegraph operator had garbled the original wire, *Found a lion* having been derived from *foundation* by changing a letter and spacing it out. Canned milk might have helped at that.

No Dues, No News

■ During the recent dues collecting escapades outside the J&L plant gates in Pittsburgh a similar campaign was being carried on inside the offices of W. T. Mossman, newsmonger for the J&L empire. Appropriating a wire strainer intended for recovering lost articles in gobboons, the catch-all was hung in a conspicuous place where incoming newshawks found it, decorated with signs like this: *Pay Your Dues Today—No Dues, No News.* Mr. M. hasn't stated what will happen to the dough exacted from the penniless correspondents.

Removal Notice

■ STEEL's New York office, long settled in what was at one time the Gotham's first skyscraper and tallest building (23 stories) is packing baggage to take a trip uptown to commodious new quarters on the 17th. floor of 110 E. 42 St. House warming plans include ducking for apples and an old-fashioned taffy pull.

Recovery Note

■ More new readers have joined STEEL's audience of 68,000 executives and operating men during the last two weeks than at any time since Ann was born, the day of all reckoning.

—SHRDLU

Rock, Ark., Nov. 29.
1000 tons, schools, Rutherford, N. J., Dec. 5; Carteret, N. J., Dec. 5; Boonton, N. J., Dec. 6, and Hillside, N. J., bids in.
1000 tons, jetties, Seabright, N. J.; bids Dec. 1.
800 tons, barracks and school building, New London, Conn., for United States government.
700 tons, two Chicago subway stations, Division street and Grand avenue; bids close Dec. 1.
700 tons, fourth crossing Sacramento river, Central Valley project, California; American Bridge Co., Pittsburgh, low.
610 tons, bridge, Elmira, N. Y.; tentative bid date Dec. 12; Robinson & Steinman, New York, engineers.
500 tons, laboratory building, Bressler memorial, for University of Maryland, Baltimore.
500 tons, school, Paterson, N. J.; bids Nov. 28.
500 tons, bascule bridge with approaches, Oshkosh, Wis.; bids close Nov. 29.
500 tons, locomotive crane, specification 8982, Mare Island, Calif.; bids open at Washington, Nov. 30.
500 tons, storehouse, Washington navy yard; bids Dec. 7.
500 tons, auditorium, Topeka, Kans.
500 tons, technical high school, Auburn, N. Y.; bids Dec. 1.
460 tons, warehouse superstructure for Port of Seattle; bids soon.
450 tons, student union building, for Indiana State Teachers college, Terre Haute, Ind.
400 tons, state bridge, Des Moines, Iowa.
400 tons, Willert park housing project, Buffalo; bids Dec. 9.
395 tons, Oregon state Umpqua river bridge; C. J. Montag, Portland, low.
368 tons, bridge, St. Joseph, Idaho.
330 tons, three bridges, Passaic county, New Jersey; bids Dec. 14.
300 tons, state bridge, project 41 (3), Benkelman, Nebr.
300 tons, Marked Tree, Ark., St. Francis drainage project; List & Weatherly, Kansas City, Mo., low.
300 tons, bridge, Clifton, N. J.; bids Dec. 14.
300 tons, commercial high school, Auburn, N. Y.; bids Dec. 1.
300 tons, bridge over St. Joe river, St. Joe, Idaho, for United States forest service.
300 tons, ten-story garage building, Carson Pirie Scott & Co., Chicago; bids Nov. 29.
275 tons, waterworks, Sandusky, O., for city.
270 tons, bridge, Farmington-Barkhamsted, Conn.; bids Dec. 5.
266 tons, bridge, Neilsville, Minn.
265 tons, state bridge, project 439 (1), Benkelman, Nebr.
250 tons, school building, Dallas, Tex.
250 tons, building, for Phelps Dodge Corp., Laurel Hill, N. Y.
225 tons, tunnel supports, Olmsted and Alpine-Draper tunnels, Provo river project, Utah, specification 808; bids on general contract rejected.
215 tons, state bridge, Bayfield county, Wisconsin.
200 tons, inspection stations, Washington, for District of Columbia.
200 tons, state bridge, Pearl street, New London, Wis.
200 tons, third crossing of Sacramento river, Central Valley project, California; American Bridge Co., Pittsburgh, low.
200 tons, Wilkes-Barre, Pa.; bids Dec. 5.
134 tons, crossing near Pompey's Pillar, Mont.; bids Nov. 29.
170 tons, viaduct over Chicago, Burlington & Quincy railroad, project 41 (4), Benkelman, Nebr., for state.
165 tons, state bridge, Fargo, N. Dak.
165 tons, Fourth district school, Covington, Ky., for board of education.

150 tons, main tower platforms, for Standard Oil Co. of Indiana, Whiting, Ind.
150 tons, state bridge, Bartlett, N. H.
150 tons, Belknap junior high school, Lockport, N. Y.; bids Nov. 28.
145 tons, steel stringer bridges, Marblehead, Millville and Pittsfield, Mass.; bids in on latter two; Marblehead closing Nov. 29.
125 tons, central school, Argyle, N. Y., for board of education.
125 tons, senior high school, Waverly, N. Y.
125 tons, new plant, Hope Window Co., Jamestown, N. Y.; bids Dec. 5.
120 tons, Oregon state bridge Klamath county; C. J. Montag, Portland, low.
116 tons, Roza irrigation project; bids at Yakima, Wash., Dec. 8, includes 36 tons of linear plates.
100 tons, H-piling, Port of Seattle terminal dolphins; bids Dec. 5.
100 tons, Hawley junior high school, Lockport, N. Y.; bids Nov. 28.
100 tons, crossing, Roosevelt county, Montana; bids Nov. 29.
100 tons, Caesar Rodney high school, Wyoming, Del.; bids Nov. 30.
100 tons, chapel, Naval academy, Annapolis; bids Dec. 21.
Unstated tonnage, Idaho state highway projects, II-span bridge near Rigby and 400-foot span over Snake river; bids soon at Boise.
Unstated tonnage, three state passes in Montana, $390,000 available; bids at Helena, Nov. 29.

Reinforcing

Reinforcing Bar Prices, Page 71

New York—Except for 2500 tons, ramps, Meeker avenue bridge, Brooklyn, inquiry is light with buying confined mostly to numerous small lots. Although still weak, prices are responding erratically to efforts to firm quotations.

Pittsburgh — Reinforcing bar demand is holding well with satisfactory tonnages now awaiting placement. The price situation has cleared fairly well in most sections. New projects include a federal housing project, Louisville, Ky., involving 1000 tons.

Cleveland—While fabricators look for a moderate increase in concrete bar demand from private sources through December, evidence of improvement has yet to appear. Prospective public work indicates encouraging betterment in demand from that direction shortly.

Boston—Award of 500 tons, Providence, R. I. post office annex, leads reinforcing bar buying. Small-lot purchases for bridges and repairs are numerous, generally well distributed among sellers. Leading pending project includes 750 tons, federal jail, Danbury, Conn. Highway requirements are light, the closing year being a slow one for mesh in this district. Prices are still easy.

Philadelphia — Considerable pending work is affected by lack of financing arrangements, but a number of jobs continue before the trade. Competition continues extremely keen with prices weak.

St. Louis — Inquiries are somewhat better. Projects pending call for about 750 tons, and consist mainly of drainage and flood wall projects. Outlet through private construction contracts remains restricted.

Seattle — Inquiry is slow and no important tonnages have recently developed. Interest centers in awards for the Narrows bridge and Lake Washington pontoon structures, Seattle, still pending. Unstated Eastern supplier is reported to have taken 750 tons involved in a barracks structure at Fort Lewis, Wash. Reclamation bureau will open bids Dec. 8 at Yakima, Wash., for a unit of the Yakima ridge canal, Roza project, involving 571 tons.

San Francisco — The reinforcing bar market continues the most active one and 9222 tons were placed, bringing the aggregate for the year to 138,353 tons, compared with 88,814 tons in 1937. Unnamed interests secured 4500 tons for Long Beach, Calif.

Concrete Bars Compared

	Tons
Week ended Nov. 26	**10,371**
Week ended Nov. 19	**5,738**
Week ended Nov. 12	**2,287**
This week, 1937	**4,635**
Weekly average, year, 1937	**6,061**
Weekly average, 1938.....	**6,754**
Weekly average, October..	**6,990**
Total to date, 1937	**298,719**
Total to date, 1938.....	**317,467**

Includes awards of 100 tons or more.

Reinforcing Steel Awards

4500 tons, for city of Long Beach, Calif., to unnamed interest.
900 tons, pier at Port Allen, Kauai, T. H., to unnamed interest.
750 tons, barracks structure, Fort Lewis, Wash., to unnamed eastern interest; Geo. A. Fuller Co., Los Angeles, general contractor.
500 tons, parcel post office, Providence, R. I., to Sweets Steel Co., Williamsport, Pa.; George A. Fuller Co., New York, contractor.
368 tons, veterans hospital bulding, Bronx, N. Y., to Truscon Steel Co., Youngstown, O.; through Lexington Concrete Co., subcontractor under Wilaka Construction Co., New York.
350 tons, sewage disposal plant, Chester, Pa., to Bethlehem Steel Co., Bethlehem, Pa.; Perry Construction Co., Atlantic City, N. J., contractor.

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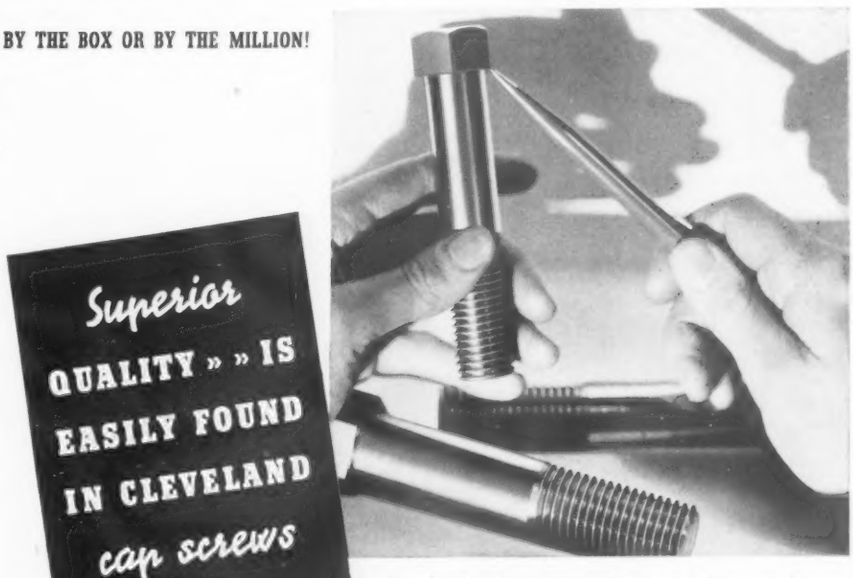

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350 tons, North Hollywood junior high school, Los Angeles, to unnamed interest.
300 tons, remodel Kern avenue high school, Los Angeles, to unnamed interest.
290 tons, boardwalk, Kenmore, N. J., to Truscon Steel Co., Youngstown, O.
246 tons, section 19, Turnpike, Cumberland county, Pennsylvania, docket No. PA-1949-F, to Bethlehem Steel Co., Bethlehem, Pa.; L. M. Hutchinson, Mt. Union, Pa., contractor.
200 tons, addition to high school, Phoenix, Ariz., to unnamed interest.
200 tons, addition to Coco Cola plant, Los Angeles, to unnamed interest.
180 tons, Washington state Lewis river bridge, to unstated Portland jobber; I. H. Hoffman, Portland, general contractor.
175 tons, oil and paint shop, navy yard, Boston, to Concrete Steel Co., New York.
174 tons, gymnasium, Freemont high school, Oakland, Calif., to Herrick Iron Works, Oakland.
153 tons, auditorium, high school, Delane, Calif., to unnamed interest.
150 tons, addition to high school, San Pedro, Calif., to unnamed interest.
150 tons, schools at Shafter and McFarland, Calif., to Consolidated Steel Corp., Los Angeles.
130 tons, bridge over Olentangy river, Fifth street, Columbus, O., to Bethlehem Steel Co., Bethlehem, Pa.
105 tons, addition to Bret Harte high school, Los Angeles, to unnamed interest.
100 tons, addition to Bullock's, Los Angeles, to Consolidated Steel Corp., Los Angeles.
100 tons, addition to junior college, Phoenix, Ariz., to unnamed interest.

Reinforcing Steel Pending

2500 tons, ramps, Meeker avenue bridge, Newtown creek, Brooklyn, N. Y.; bids Nov. 28.

1000 tons, four girder bridges and two smaller bridges, Cape May, N. J.; bids Dec. 15, Cape May bridge commission; Ash, Howard, Needles and Tammen, New York, consulting engineers.

1000 tons, housing project, Louisville, Ky.

975 tons, Thomas Circle underpass, Washington; James Stewart, New York, low.

850 tons, bureau of reclamation, invitation A-38,315-A, for delivery in Wash-Calif.; bids Nov. 28.

700 tons, vocational school, South side, Chicago.

571 tons, Roza project, Wash.; bids to reclamation bureau, Yakima, Wash., Dec. 8.

550 tons, Oceanic bridge, Rumson, N. J.; bids Dec. 9, Ash, Howard, Needles & Tammen, New York, consulting engineers.

500 tons, tanks, Colonial Beacon Oil Co., Everett, Mass.

409 tons, athletic field, George Washington high school, San Francisco; general contract to Meyer Construction Co., San Francisco at $347,470.

400 tons, warehouse, Portsmouth, N. H., navy yard.

390 tons, mostly mesh, highway project RC-4006, Wayne county, New York; Warren Bros. Roads Co., Cambridge, Mass., general contractor, $364,259.20, bids Nov. 15 Albany.

390 tons, men's residence, Purdue university, Lafayette, Ind.

350 tons, Saks Fifth avenue store, Los Angeles; general contract awarded to C. L. Peck, H. W. Hellman Bldg., Los Angeles.

300 tons, flood wall and railway track reconstruction, Jefferson county, Arkansas; bids at Little Rock, Ark. Nov. 29.

300 tons, reservoir, Reading, Pa.; C. W. Good, Lancaster, Pa., low.

300 tons, Willert Park housing project, Buffalo; bids Dec. 9.

253 tons, section of superhighway, Harrisburg to Pittsburgh.

250 tons, Key bridge, Washington; D. E. Lashmutt Bros. Inc., Arlington, Va., low.

250 tons, barracks, Fort Slocum, New Rochelle, N. Y.; Sol Lustbader Inc., New York, low.

230 tons, women's dormitory, Bloomington, Ind.

225 tons, bars and mesh, state highway project, Orange county, New York; bids Nov. 29, Albany.

225 tons, barracks at Fort Thomas, Ky., general contract to F. H. McGraw Co., Middletown.

200 tons, Marked Tree, Ark., St. Francis drainage project. List & Weatherly, Kansas City, Mo., low.

190 tons, reservoir, Denver, Colo.; bids Nov. 30.

175 tons, school, Bloomfield, N. J.; Millimet Construction Co., Union City, N. J., low on general contract.

175 tons, mostly mesh, highway project RC-4005, Rockland county, New York; Molloy & Murray Contracting Co. Inc., Yonkers, N. Y., $189,833.10, bids Nov. 15, Albany.

168 tons, crossing in Yellowstone, Roosevelt and Wheatland counties, Montana; bids Nov. 29.

150 tons, hospital, Naval academy, Annapolis; bids Nov. 29.

150 tons, foundations for naval air station, Alameda, Calif.; specification 8609; bids Nov. 30.

150 tons, Hawley junior high school, Lockport, N. Y.; bids Nov. 28.

150 tons, ward building for Koch Hospital; C. H. Schroeder Building and Construction Co., St. Louis, low.

135 tons, various Oregon state road projects; bids in.

135 tons, Jefferson county, Arkansas, drainage distribution; bids Little Rock, Ark., Nov. 30.

130 tons, Belknap junior high school, Lockport, N. Y.; bids Nov. 28.

110 tons, water supply system, Green Haven, N. Y.

100 tons, chapel, Naval academy, Annapolis; bids Dec. 21.

100 tons, state bridges, Connecticut; bids Dec. 5.

Unstated, social science building, University of Washington; bids at Seattle, Dec. 7.

Unstated, concrete arch culvert, Grants Pass; bids Dec. 1.

Unstated tonnage, National Institute of Health, Bethesda, Md.; approximate cost $1,500,000; bids Dec. 16.

Pig Iron

Pig Iron Prices, Page 72

Pittsburgh — Pig iron sales are spotty and while the total shows little change, inquiries are more active. November shipments are expected to approximate October's, with improvement looked for in December. Blast furnace operations are unchanged in number of active stacks, although schedules are higher than a month ago.

Cleveland—Only slight improvement over October is expected in pig iron shipments this month, but a larger gain is looked for in December as a consequence of anticipated increases in needs of automotive foundries. Most consumers are covered for the remainder of the quarter, though some who underestimated requirements have re-entered the market.

Chicago—Shipments so far in November are 15 to 20 per cent heavier than a month ago. Automotive needs lead gains in foundry operations, although farm equipment builders have increased their requirements. Miscellaneous foundry activity shows little change and orders for railroad castings still lag. New business in pig iron consists of a fair number of small lots.

Boston — Arrival of 1000 tons of Dutch iron at Bridgeport, Conn., for sale from storage overshadows a listless pig iron market, sales being limited to small scattered lots. Shipments have also dwindled, consumers having taken in most tonnage against orders. Except for the larger melters inventories are not heavy. Foundry melt, however, shows few gains. Prices are firm, including export offerings, and first quarter price announcements are expected to be withheld until steel quotations for that period are determined.

New York—Pig iron releases continue to taper, and gain in shipments this month over October at best will be slight. Most demand is coming from producers of light castings. Sales continue small, consumers anticipating no price increase next quarter, in the meantime subsisting on previous forward contracting. The new trade pact with Great Britain will result in a reduction Jan. 1 of 37½ cents in the import duty on low phosphorus iron, with the same cut applying to other foreign producers under the "favored nation" clause. Little iron of this grade has come here from abroad the past few years.

Philadelphia — Releases against pig iron contracts are expanding moderately. Soil pipe makers now are issuing releases for the first time in a number of weeks. While foundry operations average less than 50 per cent, the tendency is upward. New business is restricted.

Buffalo—Pig iron shipments hold at the year's best level, while November sales of castings are well ahead of October. Eight of 15 blast furnaces are active, highest production in 12 months. Automotive accessory castings are in better demand, while heating equipment manufacturers continue fairly active.

St. Louis — November pig iron shipments are expected to be 10 to 20 per cent ahead of October and substantially higher than a year ago. Foundry operations generally

are sustained or higher since a month ago, with activity of stove manufacturers stimulated by cold weather. Farm equipment builders are less active, but jobbing plants are slightly busier.

Birmingham, Ala.—With 16 of the district's 18 blast furnaces pouring iron, production shows no immediate indication of recession, although there will be the usual holiday slackening which already is being felt in some quarters.

Toronto, Ont.—Business in small lots shows further improvement, with melters taking shipments steadily against contracts. Pig iron consumption is increasing, with prospects favorable for additional gains during coming weeks.

Scrap

Scrap Prices, Page 74

Pittsburgh—Scrap prices have advanced on higher offerings by most active buyers, but although the market tone is strong, occasional signs of weakness are appearing. A wide spread exists in heavy melting steel prices. Large quantities of No. 1 have moved into consumption at dealers' buying prices of $15.75 and $16, indicating a mill figure of about $16, while some sales of small lots have gone at $15. Nevertheless, the market appears quotable at $15.50 to $16. Secondary steelmaking grades have followed the rise in No. 1 steel.

Cleveland — Fair movement of scrap to outside destinations continues in spite of sudden snow and cold. Some material continues to arrive by lake. Buying is light and expected to lessen as inventory approaches. Prices are steady.

Chicago—Additional strength has appeared in scrap prices, with No. 1 heavy melting steel up 25 cents at $14.50 to $15. At the same time, brokers are paying $15 or higher for this grade, pointing to a further rise on subsequent mill buying. Higher prices also are quoted on several other grades.

Boston — Iron and steel scrap prices are barely steady with export quotations inclined to be easier. More tonnage is moving at around $13.00, dock for No. 1 heavy melting, although slightly better is being paid for tonnage lots. Domestic consumers consistently refuse to follow the export market on grades being exported with the central Massachusetts steelworks paying little better than $11.50, delivered, for heavy melting. Slightly better demand for foundry grades has failed to lift prices for district delivery, while unprepared scrap is off slightly at district yards.

New York—Business is light, foundries and steelworks purchasing for only early needs. Prices generally are unchanged. Principal activity is in export scrap, with brokers paying as high as $12, dock, for large tonnages of heavy melting steel. Most business is being done at $11.50.

The Sixth avenue elevated railroad structure, to be wrecked soon after the first of the year, will yield 18,742 tons of iron and steel scrap. This will be the first of the elevated lines in New York to come down, others to follow eventually involving 274,748 tons in Manhattan and the Bronx. These include Second avenue, 43,796 tons; Third avenue (Manhattan), 52,798 tons; Third avenue (Bronx), 42,451 tons; Sixth avenue, 18,742 tons; Ninth avenue, 60,340 tons; 99th street yard, 822 tons; 129th street yard, 3149 tons; 149th street yard, 6031 tons; 179th street yard, 774 tons; Fulton street, 45,845 tons.

Philadelphia — Export demand for scrap is more active with brokers offering $14 for No. 1 and $13.50 for No. 2 for carlots and 50 cents more for round tonnages. Domestic mills display no interest in new commitments and a large independent continues to hold up shipments. New domestic business is not likely to be negotiated at present quotations, according to the scrap trade. Cast and specialty grades are active.

Buffalo—Scrap has a steady undertone, supported by recent mill purchases and gains in consumption. Dealers find little difficulty in covering sales at prevailing prices and are hopeful of additional buying shortly in the replenishment of consumers' stocks.

Detroit — Scrap prices generally have moved upward, reflecting increased optimism among dealers as well as demand from mills for consumption in other districts. Bundles are unchanged at $12.25, based on the latest sale, but several other grades are 25 cents to $1 higher. Heavy melting steel at $10 to $10.50 is up 50 cents. Buying of new heavy auto cast has stimulated this item, the market now being $1 higher at $12.50 to $13. Borings and turnings have advanced 25 cents on a sale at $6.75, delivered at the furnace.

Cincinnati — Dealers have advanced prices 25 cents to $1 a ton, with heavy melting steel up 25 cents at $11.75 to $12.25. Latest increases, the second in two weeks, are bringing out adequate supplies. Most dealers, however, are inclined to retain part of their accumulations of the more active grades. Blast furnace and foundry scrap is quiet.

St. Louis—The market here has been enlivened by the purchase of 10,000 tons of heavy melting steel by an east side mill, the first order from this interest in a number of weeks. Prices paid were $14 for No. 1 and $13 for No. 2, a 25-cent advance. A number of other grades also are stronger, influenced by latest sales, strength at other centers and moderate offerings by railroads and country dealers.

Birmingham, Ala.—Scrap is not better off, as far as tonnage moved

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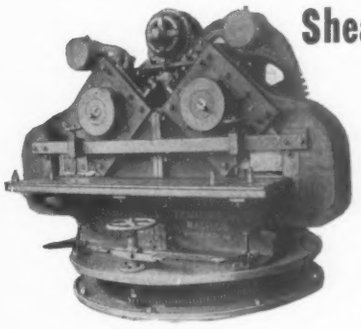
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is concerned, than a week ago despite some flurry in buying of heavy melting which accounted for an increase of $1 at that time.

Toronto, Ont.—Scrap trading continues limited principally to heavy melting steel and machinery cast. Dealers look for more diversified demand and larger volume in coming months as a result of better prospects in various industries. Scrap offerings are drying up, particularly from rural districts.

Warehouse

Warehouse Prices, Page 73

Pittsburgh—Orders and inquiries are steady, with the more important inquiries pointing to heavier needs following the first of the year. Bar demand is somewhat better, although shapes are slower and plate demand is light.

Cleveland—Gains since the middle of the month are expected to push November shipments 20 per cent ahead of October. Improved demand for bars, plates and shapes recently is counted on to continue through most of December, with inventory and holiday period expected to restrict activity late in the year.

Chicago — Sales are declining gradually, in line with the usual seasonal trend. A downward trend is expected to prevail until mid-January.

New York—Sales of steel pipe to plumbing supply houses through jobbing channels is restricted by a strike of the former's truck drivers. Galvanized sheets are moving slightly better, but most warehouses' total volume this month will fall slightly under October.

Philadelphia — Some improvement is noted in both tonnage and dollar volume, with demand fairly well diversified. Prices are somewhat steadier.

Buffalo—Sales this month to date are at about the October rate, with a slight drop anticipated for November as a whole, due to the fewer number of working days. Orders are in small lots for immediate needs.

St. Louis—Business is steady or slightly heavier, with buying more diversified. Sheet, strip and wire are most active.

Semifinished

Semifinished Prices, Page 71

Pittsburgh — Semifinished steel production has been increased materially by integrated mills for their own consumption, but orders from rerollers are unchanged. A large part of recent gains results from heavier output of slabs at Edgar Thomson works for use by the new Irvin works which now is in operation. Some gain in sheet bar orders in anticipation of heavier tin mill schedules is looked for soon. Skelp demand is steady, with wire rods slightly less active.

Steel in Europe

Foreign Steel Prices, Page 73

London—(*By Radio*)—Underlying conditions in the British iron and steel market are improving but buying is reported held back until the price situation has cleared. Stocks of hematite pig iron are still a burden on the market. Structural engineers furnish the best market support. Sheet demand is improving. Steel exports are low. Demand for tin plate is fair and galvanized sheets are quiet.

The Continent reports export trade is quieter, mainly owing to political uncertainties. Orders are being received from Portugal, Finland and the Argentine.

Tin Plate

Tin Plate Prices, Page 70

Tin plate specifications are slightly heavier but still are light. Buying remains hand-to-mouth, a condition attributed to the approaching inventory period, although many buyers already have only small stocks on hand. Production has gained moderately to 35 per cent, against 30 prior to the recent price reduction. A sharp pickup in demand is looked for next year, following the quiet business of 1938 during which activity was restricted by the large carryover of plate and cans from 1937. Export buying continues below average.

Bolts, Nuts, Rivets

Bolt, Nut, Rivet Prices, Page 71

Automotive needs primarily are responsible for a moderate gain in bolt, nut and rivet specifications this month. Some small orders have been received from railroad sources, principally for repair work, but demand from that direction still is disappointing. Requirements of farm equipment builders have improved, while shipments to jobbers are steady. The season has retarded demand from some consumers, including stove and range manufacturers, but miscellaneous users are accounting for sustained tonnages. Fairly large orders remain to be placed in the East for pending shipwork.

Ferroalloys

Ferroalloy Prices, Page 72

New York — Ferromanganese shipments this month will be the heaviest of the year to date, with the December outlook favorable. Without a first quarter price advance, however, some tapering is expected late this month. Action on prices is looked for before the middle of December. The market currently is $92.50, duty paid, Atlantic and Gulf ports. Domestic spiegeleisen continues active at unchanged prices. Ferrotungsten demand is slow to gain.

Buoy Chain Is Let

New York — Bids close Dec. 12 with the bureau of lighthouses, Staten Island, on 522 tons, wrought iron open link buoy chain, ¾ to 1⅝-inches diameter, and wrought iron chain bridles for buoys.

Nonferrous Metals

Nonferrous Metals Prices, Page 85

New York—Acute weakness in London metals early last week, due to foreign political uncertainties, unsettled domestic markets. A generally firmer tone developed after midweek, however, on the announcement that the foreign cartel would restrict copper production to 110 per cent of basic tonnages. The Canadian trade agreement, providing for lower American tariffs on zinc, cadmium, aluminum, bronze tubes, litharge, etc., affected immediately only the domestic zinc price which eased $6 per ton on Monday.

Copper—Export dropped to around 10.45c, c.i.f. before recovering later in the week to around 10.70c. This easing in the foreign market resulted in sharply lower bids from smelters for copper and brass scrap. As confidence in the domestic price structure returned, bids recovered fractionally from the lows. Brass and bronze ingot prices eased ⅛-cent, due partly to weakness in red metal scrap and partly to a competitive situation in the East. Buying interest in electrolytic copper was light with prices unchanged here at 11.25c, Connecticut.

Tin—Heavy liquidation of speculation holdings abroad, coupled with light consumer buying here, resulted in a sharp drop in prices in London on Monday and Tuesday which was augmented by declines in the sterling exchange rate. The subsequent recovery in tin prices was partially nullified by further easi-

ness in sterling. Straits spot closed at 46.00c.

Lead—Prices firmed at 4.95c, East St. Louis, on publication of the October statistics showing a further drop of nearly 14,000 tons in refined stocks. Due to well-covered position of consumers fresh demand was rather light.

Zinc—Prime western declined 30 points on Monday to the basis of 4.75c, East St. Louis. Producers here were forced to lower quotations in order to meet foreign competition on first quarter business.

Equipment

New York—Decline in new foreign business is accompanied by a slight drop in domestic machine tool orders, November volume with most dealers being slightly under the previous month. Purchases for more than one or two tools at a time by private industry are few, most being for replacement or for higher production units. The airplane industry is practically the only one to buy for expansion. Practically nothing is being bought by railroads. For the balance of the year, government inquiry leads. The Frankford, Pa., arsenal has estimates on eight 16 x 30-inch and six 12 x 30-inch geared head engine lathes and the Picatinny, N. J., arsenal on two high-speed sensitive drill presses. For various navy yards, bureau of yards and docks closes Nov. 30 on eight 40-ton and five 30-ton standard gage, eight-wheel type locomotive cranes.

Boston — Foreign backlogs continue to sustain shop operations at numerous machine building plants, although new export orders are fewer, with a moderate decline in domestic purchases. The proposed expansion in airplanes, with an extra engine for each plane is expected to stimulate government business which in several departments is already mounting. Jones & Lamson Machine Co., Springfield, Vt., has been awarded two thread grinder machines and attachments for the navy, Washington at $23,016.36. For Portsmouth, N. H., Henry Prentiss & Co., New York, booked a horizontal boring, drilling and milling machine at $22,338. Baldwin-Southwark Corp., Eddystone, Pa., at $58,900, is low on a plate bending roll machine for Boston. Bids close Dec. 6, at Washington, on six single spindle sensitive drills for Boston. A list for the Springfield, Mass., armory includes three turret lathes, Nov. 30; three precision lathes, cutters, grinders and small tools.

Chicago — Machine tool demand was slower the past week. Inquiries were off slightly but bookings were far below the previous week, when there was a fair amount of activity. The latter part of the week was quiet, but the first part of this week is hoped to bring enough bookings

Nonferrous Metal Prices

Spot unless otherwise specified. Cents per pound

	Copper			Straits Tin, New York							
Nov.	Electro, del. Conn.	Lake, del. Midwest	Casting, refinery	Spot	Futures	Lead N. Y.	Lead East St. L.	Zinc St. L.	Aluminum 99%	Antimony Amer. Spot, N.Y.	Nickel Cathodes
19	11.25	11.37½	10.77½	46.25	46.40	5.10	4.95	5.05	20.00	12.25	35.00
21	11.25	11.37½	10.77½	46.00	46.15	5.10	4.95	4.75	20.00	12.25	35.00
22	11.25	11.37½	10.77½	45.85	46.00	5.10	4.95	4.75	20.00	12.25	35.00
23	11.25	11.37½	10.77½	46.10	46.25	5.10	4.95	4.75	20.00	12.25	35.00
24—Holiday.											
25	11.25	11.37½	10.77½	46.00	46.15	5.10	4.95	4.75	20.00	12.25	35.00

MILL PRODUCTS

F.o.b. mill base, cents per lb. except as specified. Copper brass products based on 11.25c Conn. copper

Sheets

Yellow brass (high) 17.50
Copper, hot rolled 19.37½
Lead, cut to jobbers 8.25
Zinc, 100 lb. base 9.75

Tubes

High, yellow brass 20.25
Seamless copper 19.87½

Rods

High yellow brass 13.37½
Copper, hot rolled 15.87½

Anodes

Copper, untrimmed 16.62½

Wire

Yellow brass (high) 17.75

OLD METALS

Nom. Del. buying prices

No. 1 Composition Red Brass

New York 6.70-6.80
Cleveland 7.00-7.25
Chicago 6.12½-6.37½
St. Louis 6.50-6.75

Heavy Copper and Wire

New York, No. 1 ..... 8.12½-8.37½
Cleveland, No. 1 ..... 8.00-8.25
Chicago, No. 1 ..... 8.00-8.25
St. Louis 8.00-8.25

Composition Brass Borings

New York 5.80-6.00

Light Copper

New York 6.62½-6.87½
Cleveland 6.25-6.50
Chicago 6.12½-6.37½
St. Louis 6.37½-6.62½

Light Brass

Cleveland 3.50-3.75
Chicago 4.00-4.25
St. Louis 4.12½-4.37½

Lead

New York 4.00-4.25
Cleveland 4.00-4.25
Chicago 4.00-4.12½
St. Louis 4.00-4.25

Zinc

New York 2.50-2.62½
Cleveland 2.50-2.75
St. Louis 2.75-3.00

Aluminum

Borings, Cleveland 6.50-6.75
Mixed, cast, Cleveland 8.75-9.00
Clips, soft, Cleveland 13.25-13.50
Mixed cast, St. Louis 9.25-9.50

SECONDARY METALS

Brass ingot, 85-5-5-5, less carloads. 11.00
Standard No. 12 aluminum.... 14.00-14.50

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to put November on a par with October. Feeling in the trade is quite good and considerable work is pending. Outlook for December is not especially bright unless railroad buying appears.

Seattle — Tractors and other road machinery, pumping equipment and electrical items are in best demand, federal, state and county units being the heaviest buyers. Private interests are not making important replacements. Port of Seattle will require a sprinkler system and other equipment for proposed new warehouse. Pierce county, Washington, asks bids Nov. 29 for two diesel tractors and bulldozers. Chase Brass & Copper Co. will furnish 17½ tons copper expansion joints for the new Puget Sound graving dock. Puget Sound navy yard will open bids Dec. 2 for a generator set, Dec. 7 for 10 tons low phosphorus foundry pig, five tons heavily coated steel welding rods and two lip-type silicon carbide crucibles.

Construction and Enterprise

Ohio

BELLEVUE, O.—Nickel Plate railroad, Terminal building, Cleveland, has let contract to Klein Steel Co. for construction of new all-steel motor car and blacksmith shops in its yards here. Company also plans to install machinery to replace that destroyed by fire causing $75,000 loss.

CLEVELAND — Triplex Screw Co., 5317 Grant avenue, A. F. Weber, president, is taking bids on an one-story, 90 x 220-foot brick and steel addition to its factory. Cost estimated at $50,000.

HURON, O. — Village, Frank McQuellan, mayor, is taking bids due at noon, Dec. 22, on sewage plant improvements including steel cofferdam, Imhoff type plant, sludge beds and chlorinator. George B. Gascoigne Co., Cleveland, consulting engineer. (Noted Nov. 21.)

NEW CONCORD, O.—Guernsey-Muskingum Electric Co-operative Inc., Paul Fleagal, president, is preparing plans for line construction on which it has received $237,000 REA allotment, and will probably be ready for bids on Project B by Dec. 1. Consulting engineers, Putnam & Woolpert, Dayton, O. (Noted Sept. 5.)

NEW LONDON, O. — Village, C. A. Blackman, mayor, has approved bond issue and applied to PWA for a grant in the projected construction of a sewage system and sewage treatment plant to cost $131,818. Consulting engineer, Granville Scott, Citizens Bank building, Norwalk, O.

NILES, O. — Youngstown Steel Car Co., L. C. Wilkoff, executive vice president, has let contracts for expansion of its plant at total cost of $25,000.

NILES, O. — General Electric Co. has awarded contract for two-story brick and steel factory costing $50,000 to Heller Murray Co., 222 West Rayen street, Youngstown.

ST. CLAIRSVILLE, O.—Village, C. B. Bradfield, mayor, is contemplating extensions of city water lines and sewage system at cost of about $46,000; project will probably mature in spring.

Rhode Island

NEWPORT, R. I. — City is planning extensions to its water supply and distribution systems, costing about $225,000. PWA has allotted $101,115 grant.

New York

GLOVERSVILLE, N. Y. — Board of water commissioners has rejected bids and will accept new tenders on construction of a proposed filtration plant costing $312,022 with equipment. Morrell Vrooman Inc., West Main street, engineer.

ITHACA, N. Y. — City council is taking bids on construction of a sewage disposal plant costing $125,000; project financed with PWA funds. Glenn Holmes, Syracuse, N. Y., engineer.

NEW YORK — National Gypsum Co., 190 Delaware avenue, Buffalo, is planning to build a $700,000 addition to its plant at East river and 148th street. D. F. Hunt, company's chief engineer, in charge of plans for construction.

Pennsylvania

FRIEDENSVILLE, PA. — Reynolds Metals Co., 541 West Twenty-fifth street, New York, has acquired 52-acre zinc-bearing site and plans mining development. Will construct concentrating plant, mining facilities, transmission and conveying equipment at cost of over $40,000.

PITTSBURGH — United States engineer, Federal building, is taking bids to Dec. 7 for four 32,000-gallons per minute propellor type pumps with motors and parts, for pumping station No. 3, Wellsville, O., flood control project.

Michigan

DETROIT — Stamping Service Inc., 4833 Beaubien street, manufacturer of metal stampings, has let general contract for new one-story die-making and stamping plant on East Davison avenue which will cost over $40,000 with equipment.

Illinois

BLOOMINGTON, ILL. — Corn Belt Electric Co-operative has REA allotment of $1,164,000 and plans to build 1146 miles of rural electric lines in eight counties.

HERRIN, ILL. — City plans to extend and improve its sewage system at cost of $108,181; PWA has approved allotment of loan and grant on project. G. H. Anderson, city engineer.

QUINCY, ILL. — City has plans in progress for construction of a sewage disposal plant costing $185,000. Black & Veatch, Kansas City, Mo., engineers.

Indiana

ANGOLA, IND. — City, Edward Willis, mayor, takes bids due 11 a.m., Dec. 3, for constructing water softening and iron removal plant involving zeolite water softeners, iron removing units, salt storage, meters, pumps and controls. Consulting engineer, Charles Hurd, Indianapolis. (Noted Oct. 10.)

Maryland

BALTIMORE—Deere & Co., Moline, Ill., has let $125,000 contract to W. E. Bickerton Co., 515 Cathedral street, for construction of three-story, 140 x 200-foot structural steel warehouse.

BALTIMORE—Consolidated Gas, Electric Light & Power Co. is contemplating expansion in its steam-electric generating station at Westport, including installation of turbogenerating unit and high-pressure boilers with accessories.

MECHANICSTOWN, MD. — Mechanicstown Water Co. has approval of public service commission, Munsey building, Baltimore, for issuance of bonds up to $95,000 for improvements in company's water system.

District of Columbia

WASHINGTON — Navy department, yards and docks, is taking bids for unstated period on boilers, stokers, fans and accessories (specification 8820) for installation at Charleston, S. C.; and on coal-burning boilers, fans and appurtenances (specification 8822) for installation at Norfolk, Va.

WASHINGTON—Navy department, bureau of supplies and accounts, will take bids until 10 a.m. Dec. 2, for universal milling machine (schedule 4939), delivered Portsmouth, N. H.; two upright drilling machines (schedule 4941), delivered Boston; coil-winding machine (schedule 4942), delivered Brooklyn, N. Y.; two welding positioner machines (schedule 4943), delivered Philadelphia; metal cutting machine (schedule 4944), delivered Norfolk, Va.; motor driven punch (schedule 4945), delivered Norfolk, Va.

Kentucky

LUDLOW, KY. — City, E. H. Martin, clerk, plans to improve its waterworks plant. Cost of project estimated at $122,500; PWA has approved grant. A. Lefebre, Cincinnati, consulting engineer.

MORTONS GAP, KY. — City, J. T. Davis, mayor, plans to improve its waterworks at cost of $65,394. Westcott & Thornton, Owensboro, Ky., engineers.

OWENSBORO, KY. — Voters have approved $1,300,000 bond issue to supplement WPA grant of $1,040,015 in the construction of a combined water and light plant. (Noted Oct. 3.)

PARIS, KY. — City proposes to build a complete sewage disposal plant which is estimated to cost approximately $75,000, and will receive bids Dec. 7.

Florida

BRADENTON, FLA.—City, Harold Siver, clerk, receives bids Nov. 28 for construction of waterworks improvements costing total of $276,200 and including treatment plant, raw water line, centrifugal pumps, diesel generator unit, dam and river pumping station. C. K. S. Dodd, Sarasota, Fla., consulting engineer. (Noted Oct. 17.)

GAINESVILLE, FLA.—PWA has granted $54,000 to the city in the construction of $122,000 improvements and extensions in its waterworks, including deep well, pump house, clear water reservoir, elevated steel tank and cast iron lines.

HAINES CITY, FLA.—City has PWA grant and loan totaling $94,000 for improvements proposed for its waterworks; project involves well, turbine-type pump and pump house, 200,000-gallon storage tank, and steel and cast iron lines.

JACKSONVILLE, FLA. — City is planning to enlarge and extend South Jacksonville water distribution system at cost of $452,000; PWA has approved $320,000 grant on project.

LAKELAND, FLA.—City, Charles Larsen, manager, proposes to construct a

light and water system costing $315,000 and will finance by issuing $175,000 in bonds and seeking $141,250 PWA grant.

OCALA, FLA.—City proposes to improve its waterworks by building lime softening plant, recarbonating basin, clear well and five pumps; PWA has allotted $77,000 loan and $63,000 grant on work.

ORLANDO, FLA. — City has plans under way to add new building and equipment costing $798,000 in power plant expansion program. Roberts & Co., Atlanta, Ga., engineer.

PANAMA CITY, FLA. — City, H. N. Mizell, manager, has plans for improving its waterworks at estimated cost of $63,363. PWA has allotted loan and grant to city on the work. E. B. Barnett, Panama City, consulting engineer.

PENSACOLA, FLA. — PWA has allotted loan and grant totaling $107,272 to city to enable construction of improvements to waterworks and water distribution system, including mains, hydrants, etc.

PENSACOLA, FLA. — Port committee plans to install motors, controls, conveyors, transformers and electrical hoists in new group of buildings on waterfront, including cold storage and refrigerating plant, warehouse, compress building and grain elevator. Bond issue of $1,549,000 authorized for project.

Georgia

ALMA, GA.—Satilla Rural Electric Membership Corp., serving eight Georgia counties, has been allotted an additional $178,000 grant by REA for constructing rural power transmission lines totaling about 180 miles.

Mississippi

EAST TUPELO, MISS.—Town will receive bids Dec. 1 for construction of water works system including wells, reservoir, distribution system and service connections. Feemster & Striger, Tupelo, associated architects and engineers.

North Carolina

DURHAM, N. C.—American Tobacco Co., Preston L. Fowler, local manager, has awarded contract to George W. Kane, Trust building, for construction of $500,000 Bull Durham tobacco factory. Plant to be five-stories, 90 x 280 feet, brick and steel, with air conditioning and sprinkler systems. Francisco & Jacobs, New York, architects. (Noted Nov. 7.)

WADESBORO, N. C.—Town, L. D. Rivers, mayor, receives bids Dec. 2 for construction of concrete dam, force main, 300,000-gallon tank and tower and wash water tank on 40-foot tower. Paul M. Van Camp, Southern Pines, N. C., engineer.

Tennessee

CHATTANOOGA, TENN. — Electric Power board, S. R. Finley, chief engineer, receives bids Nov. 29 on Contract No. 3-F, for substation transformers estimated to cost $90,000, and on same date Contract No. 3-L, for distribution substation estimated to cost $85,000.

Louisiana

CROWLEY, LA. — City, J. M. Buatt, mayor, receives bids Dec. 1 for construction of sanitary sewer extensions and new sewage disposal plant estimated to cost total of $300,000. L. J. Voorhies, Baton Rouge, La., consulting engineer. (Noted Oct. 17.)

LAKE PROVIDENCE, LA. — City has voted $250,000 in bonds to supplement $112,000 PWA grant in water and light plant project. Plans provide for construction of fireproof building, 1000-horsepower engine, two tanks, reservoir and filtration plant.

NEW ORLEANS—City has plans maturing for waterworks and sewer extensions, with issuance of $1,500,000 bonds approved by voters, Fred Earhart is acting mayor. (Noted Sept. 12.)

Virginia

SOUTH HILL, VA.—South Hill Factory Corp. has awarded general contract to Fred B. Fuqua & Co., Krise building, Lynchburg, Va., for construction of one-story main factory building, 70 x 170 feet, with boiler house and storage wing, 23 x 36 feet, construction being of brick and steel. Contract to be placed later for electric light and power. Bryan & Terhune, New York, engineers.

Missouri

DEXTER, MO.—City, Thomas Ross, mayor, is receiving bids for construction of water sterilization plant and sewage disposal plant. Consulting engineers are Russell & Axon, St. Louis.

KANSAS CITY, MO.—Fruehauf Trailer Co., Funston and Chrysler roads, has awarded contract to Collins Construction Co., Davidson building, for constructing an addition to its plant, 100 x 152 feet, including new dock.

MOBERLY, MO. — City will soon take bids on waterworks improvements costing $33,000, including 125,000-gallon elevated steel tank, reservoir, basins, and alterations to filter plant and pump house. Black & Veatch, Kansas City, Mo., consultants. Noted Oct. 10.)

PARKVILLE, MO. — Platte County Water Co., E. C. Thompson, president, has franchise and is preparing plans for construction of a waterworks and distribution system costing $150,000. Henrici-Lowry Engineering Co., Kansas City, Mo., engineers.

ROCKVILLE, MO.—Town, F. B. Abero, clerk, receives bids Dec. 2 for constructing outfall sewer and sewage treatment plant estimated to cost $50,000. Whitman, Requardt & Smith, Baltimore, consulting engineers.

Arkansas

PINE BLUFF, ARK.—Arkansas Power & Light Co., Harvey Couch, president, has authorized construction of a dam during the next three years on the Ouachita river; project to cost about $4,500,000, with other improvements and betterments scheduled to cost over $1,000,000 annually.

Oklahoma

DEWEY, OKLA.—City, J. S. Chance, clerk, has plans under way for improvements and extensions in its waterworks and sewerage systems at cost of approximately $23,000. Consultants, Black & Veatch, Kansas City, Mo.

OKLAHOMA CITY, OKLA.—Oklahoma Gas & Electric Co. is planning to spend $1,850,000 during 1939 in making improvements and extensions in its power system.

PERRY, OKLA.—City, Fred Kretsch, mayor, plans to extend its power plant at cost of $82,000; PWA has approved grant of $36,000. V. V. Long, Colcord building, Oklahoma City, Okla., consulting engineer.

Wisconsin

CEDAR FALLS, WIS. — Willow River Power Co., Hudson, Wis., has authorized building of new transmission system from hydroelectric generating plant here to Knapp, Wis., and construction of new power substation at Knapp.

Minnesota

ANOKA, MINN. — REA has allotted $209,000 to Anoka County Co-operative Light & Power association, George Morris, superintendent, to finance projected construction of 173 miles rural transmission lines in five counties.

MOORHEAD, MINN. — City, R. G.

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Price, clerk, has voted bond issue to finance improvement of its power plant estimated to cost $196,195. Will install 3000-kilowatt generator. Engineers, Helmick, Eduskuty & Lutz, Minneapolis. (Noted Oct. 17.)

PRINCETON, MINN. — Voters approved at special election a $90,000 bond issue to aid financing of proposed construction of municipal light and power plant. Ben Whitney is village clerk.

SHERBURN, MINN. — Voters approved a $112,000 bond issue to finance construction of municipal light and power plant. Ralph D. Thomas & Associates, Minneapolis, consulting engineers.

SPRINGFIELD, MINN. — City clerk takes bids to 11 a.m., Dec. 9, on construction of sewage treatment plant consisting of primary tank, lift station, digestor, trickling filter, sludge beds, etc., and estimated to cost $39,020. Buell & Winter Engineering Co., Sioux City, Iowa, consultant. Certified check or bid bond 5 per cent to accompany bid.

WASECA, MINN. — Steele-Waseca Cooperative Electric association, L. P. Zimmerman, superintendent, has received $250,000 REA allotment for the construction of 189 miles of rural power lines in seven counties. Pillsbury Engineering Co., Minneapolis, consulting engineer.

WINSTED, MINN. — Village, Fred Roufs, recorder, will be ready for bids about Dec. 20 on construction of a proposed waterworks involving tower, tanks, pumps and mains. Druar & Milinowski, St. Paul, engineers.

Texas

CUERO, TEX.—City holds election Nov. 29 to vote on proposed issue of bonds to supplement $101,000 PWA grant in the construction of an electric distribution system. Garrett Engineering Co., Houston, Tex., consulting engineers.

ELGIN, TEX.—City has voted approval of $130,000 bond issue to finance construction of power plant, street improvements and sewer system. Doak Rainey, Austin, Tex., engineer.

GRAND FALLS, TEX.—City, J. D. Kugle, mayor, plans waterworks improvements including wells, supply main, elevated steel tank and distribution system for which $36,000 bond issue is approved. H. T. Cunningham, Grand Falls, consultant.

HOUSTON, TEX. — Brock Pattern Works, 212 Pacific, has acquired tract of land and will erect metal pattern plant costing $20,000 with building and equipment.

LIBERTY, TEX.—City has received PWA funds totaling $133,000 and has begun work on a light and power plant, granting contract to J. E. Morgan & Son, 210 N. Campbell street, El Paso, Tex.

QUITMAN, TEX.—Wood County Electric Co-operative Inc. has been allotted $195,000 by REA for construction of 207 miles rural transmitting lines in five counties.

TAHOKA, TEX.—Lynetegar Electric Co-operative Inc. will call for bids about Nov. 29 for constructing power lines in four counties. REA has allotted $304,000 on project. H. N. Roberts, Lubbock, Tex., engineer.

TEMPLE, TEX.—City, Martin Sullivan, mayor, is taking bids for extending its waterworks system; available funds total $120,000. Koch & Fowler, Dallas, Tex., engineers. (Noted Sept. 26.)

TIMPSON, TEX. — City, E. L. Hebert, mayor, plans to improve the municipal water and light plants at cost of $70,000. Municipal Engineering Co., Dallas, Tex., consulting engineer.

North Dakota

KINDRED, N. DAK. — REA has allotted $250,000 to Cass County Electric co-operative, Max Strehlow, project superintendent, to finance construction of 239 miles rural power transmission lines serving five counties. Consulting engineer, M. S. Hyland, Fargo, N. Dak.

South Dakota

JAVA, S. DAK. — City, A. C. Schlepp, mayor, will be ready for bids by Dec. 15 on the construction of a waterworks to include 50,000-gallon elevated steel tank, turbine pump and distribution system costing about $29,090. Arthur Mannes, Box 265, Aberdeen, S. Dak., engineer. (Noted Nov. 14.)

STURGIS, S. DAK. — Voters approved $70,000 bond issue to supplement PWA grant in the proposed construction of a sewage disposal plant to cost $136,364. A. W. Devers, city auditor; Chenoweth, Fraser & Forrette, Rapid City, S. Dak., consulting engineers.

Nebraska

ARLINGTON, NEBR. — Village, C. C. Cook, clerk, will take bids to 7:30 p.m., Dec. 2, on the construction of an iron removal plant costing about $10,060. H. H. Henningsen Engineering Co., Omaha, Nebr., consultant. Certified check 5 per cent to accompany bids.

DAVID CITY, NEBR. — REA has allotted $165,000 to Butler County Rural Public Power district, Phillip Tomek, president, to enable construction of 136 miles rural power lines in two counties.

DUNCAN, NEBR. — Village, F. W. Sholze, clerk, takes bids to 7:30 p.m., Dec. 6, on waterworks project estimated to cost $21,427. Consultant, H. H. Henningsen Engineering Co., Omaha, Nebr.

HOLBROOK, NEBR. — Village, S. F. Davis, clerk, is receiving bids to 10 a.m., Dec. 5, on waterworks improvements estimated to cost $30,914. H. H. Henningsen Engineering Co., Omaha, Nebr., engineer.

FUNK, NEBR. — Village, H. Franzen, clerk, is taking bids to 7:30 p.m., Dec. 5, on construction of well and pump house containing air pressure tank, pump, compressor and motor. Cost estimated at $13,244. H. H. Henningsen Engineering Co., Omaha, Nebr., engineer.

MURRAY, NEBR. — Village, C. H. Boedeker, clerk, is receiving bids to 2 p.m., Dec. 3, in the construction of waterworks improvements costing $18,147. H. H. Henningsen Engineering Co., Omaha, Nebr., consulting engineer. Certified check 5 per cent to accompany bids.

YORK, NEBR. — City takes bids to Dec. 9 for construction of municipal light and power system, including power house and distribution system, at cost of about $425,000. Robert Fulton, Lincoln, Nebr., consulting engineer.

Iowa

DAYTON, IOWA — City, George Tarrant, clerk, is taking bids to 10 a.m., Dec. 5, on power plant changes including new generating equipment, plant addition and distribution extensions costing about $60,000. Ralph Gearhart, Cedar Rapids, Iowa, engineer. (Noted Aug. 29.)

ESTHERVILLE, IOWA — REA has allotted $431,000 to the Dickinson, Emmet & Kossuth Rural Electric co-operative, Gaylord Olson, president, in the construction of 417 miles of lines through seven counties.

GLIDDEN, IOWA — Village, Eugene Mereness, clerk, takes bids to 10 a.m., Dec. 12, on the extension and improvement of its light and power plant; will install diesel engine generator. Total cost estimated at $43,200. Engineer, A. S. Harrington, Omaha, Nebr. (Noted Sept. 12.)

IOWA FALLS, IOWA — Federated Cooperative Power association, Arthur Oliphant, superintendent, has been allotted $165,000 REA grant to finance purchase of generating equipment for new rural power lines.

Utah

MOAB, UTAH — City proposes to improve and extend its water system at cost of $39,718; PWA has approved a loan and grant to finance project. Sumner Margetts, Salt Lake City, Utah, engineer.

Pacific Coast

LOS ANGELES — Owens Smokeless Heater Corp. has been incorporated with $10,000 capital. Representative, H. E. Sokolov, attorney, 6253 Hollywood boulevard, Hollywood, Calif.

LOS ANGELES — Certificate to conduct business as Western Alloy Steel Co. has been issued to A. S. Handfuss, 125 South Carson road, Beverly Hills, Calif.

SAN FRANCISCO — Sandvik Steel Inc. has been organized with $25,000 capital by directors V. G. Skinner, L. H. Shapiro, and J. K. Daniels. Representative, V. G. Skinner, attorney, 68 Post street.

SAN GABRIEL, CALIF. — Certificate to conduct business under firm name of Garvey Machine & Die Casting Co. has been granted E. W. Shock, 2528 Ivar avenue, Hollywood, Calif.

SAN LEANDRO, CALIF. — City council is taking bids on construction of sewage treatment works and pumping plant involving sludge digestors, clarifier, sewage pumps, screening and mixing equipment, engines and generators. H. N. Jenks, Palo Alto, Calif., engineer.

VENTURA, CALIF. — City, D. C. McMillan, manager, is taking bids for water treatment plant costing $140,000. Taylor & Taylor, Los Angeles, consulting engineers, prepared plans.

Canada

ST. BONIFACE, MAN. — North Star Oils Ltd., 303 Scott building, Winnipeg, T. N. Clayton, manager, is making plans to construct a $300,000 oil refinery.

MONTREAL, QUE.—Royal Typewriter Co. Ltd. will soon let contract for constructing a $100,000 typewriter plant. T. Pringle & Son, 485 McGill street, architects.

QUEBEC, QUE. — National Electricity Syndicate, Parliament building, will soon award contracts for hydropower development on Lake Decelles. Cost estimated at about $5,000,000. F. A. Gaby, 660 Ste. Catherines street, Montreal, Que., engineer.

WEST QUEBEC, QUE. — Municipality, G. Rouleau, clerk, is making plans to build a complete water system at cost of $125,000. Department of public works engineers in charge of plans.

PRINCE ALBERT, SASK. — Aircraft Skis Ltd. has plans in progress which will mature early in 1939 for construction of a factory costing over $40,000.

Comments

Readers are invited to comment upon articles, editorials, reports, prices or other editorial material appearing in STEEL. The editors cannot publish unsigned communications, but at their discretion may permit a writer to use a pseudonym when a bona fide reason exists for withholding his identity. Letters should be brief—preferably not exceeding 250 words.

Renewed Building Cheers

To the Editor:

It is, indeed, a most hopeful sign for the future of industry when building is undertaken to increase facilities for manufacture. The statement in STEEL, Nov. 28, by a vice president of The Austin Co. that the past two months have brought an unusual number of such projects, in all portions of the country, is most cheering.

Building has been held back for a long time by uncertainties of the situation and its resumption in appreciable degree indicates at least some restoration of confidence that better things are ahead. It reflects the opinion of industrial executives that larger plants will be needed in the near future to meet increased demand for their products. While this is only an opinion, it must be based on strong evidence as it is being backed up by hard cash to pay the bill.

In a period when it seems almost the only building activity is in public projects, largely paid for from the public purse, it is refreshing to find private initiative sees sufficient light to proceed with programs of this sort.

Industrial executives are a pretty hard-headed lot, not likely to be carried away by enthusiasm resulting from wishful thinking. They must be shown before they risk the cash of their stockholders. That they are beginning to do so to a greater degree than for some time past presents a trend which will help break the deadlock and perhaps put the country back on its feet.

This sort of improvement spreads itself widely over industries supplying a variety of materials and equipment, as well as employing much labor in their actual erection and in producing steel, brick and other supplies.

With large expansion programs planned by utilities the situation looks better than for several years.

FABRICATOR

Pittsburgh

Protests Minimum Wage

To the Editor:

I notice that protests against the minimum wage rates for the steel industry are beginning to appear from smaller manufacturers. Their plea is that they cannot meet government requirements and compete with others situated in better location relative to markets or possessed of advantages the smaller concern cannot match.

The penalty of not meeting the minimum wage is exclusion from government work and in the present era of large public spending this is a serious handicap. Our company has not made a protest but we have been studying the situation and so far have not seen our way clear to comply if we wish to make a profit and stay in business. After the long period of reduced sales and deficits it is heartbreaking to meet such a condition, taking away a part of the increased business now offering.

For plants like ours, located where living costs are relatively low compared with large cities, it would seem some differential could be provided to give us an opportunity to compete in spite of our other disadvantages, location, nonintegration and others.

We hope to find a way out but so far have not been able to form a plan that seems to cover our case. Please do not use our name.

MIDWEST STEELMAKER

Ohio

Small Size an Asset

To the Editor:

The article by Mr. Murray in STEEL, Nov. 28, page 22, regarding the competitive advantage of the small manufacturer over his large rivals points out a number of truths that frequently are forgotten when politicians and reformers start crying over the sad plight of the "little fellow."

Certainly there have been abuses on the part of big business. Small companies have been squeezed out of existence by practices on the part of large competitors that are to be condemned. And sometimes the ethics of the small manufacturer might well be questioned.

In my opinion—and partly because of the reasons advanced by Mr. Murray—there will always be a place for small business concerns. One important reason not mentioned in the article is the fact that big business has no corner on the brain market. In our small company are a number of extremely capable men who were associated with large corporations for a number of years, received a good training and then came with us because they preferred working for a smaller concern.

True, big business can attract key men through large salaries but it cannot afford to pay lesser executives proportionally higher salaries than those received by individuals in similar positions with small firms—and frequently the latter offer better remuneration.

We have had our troubles the past ten years, but I hate to think what would have happened to our company had we been forced to carry the materially larger overhead that is saddled on some of our competitors.

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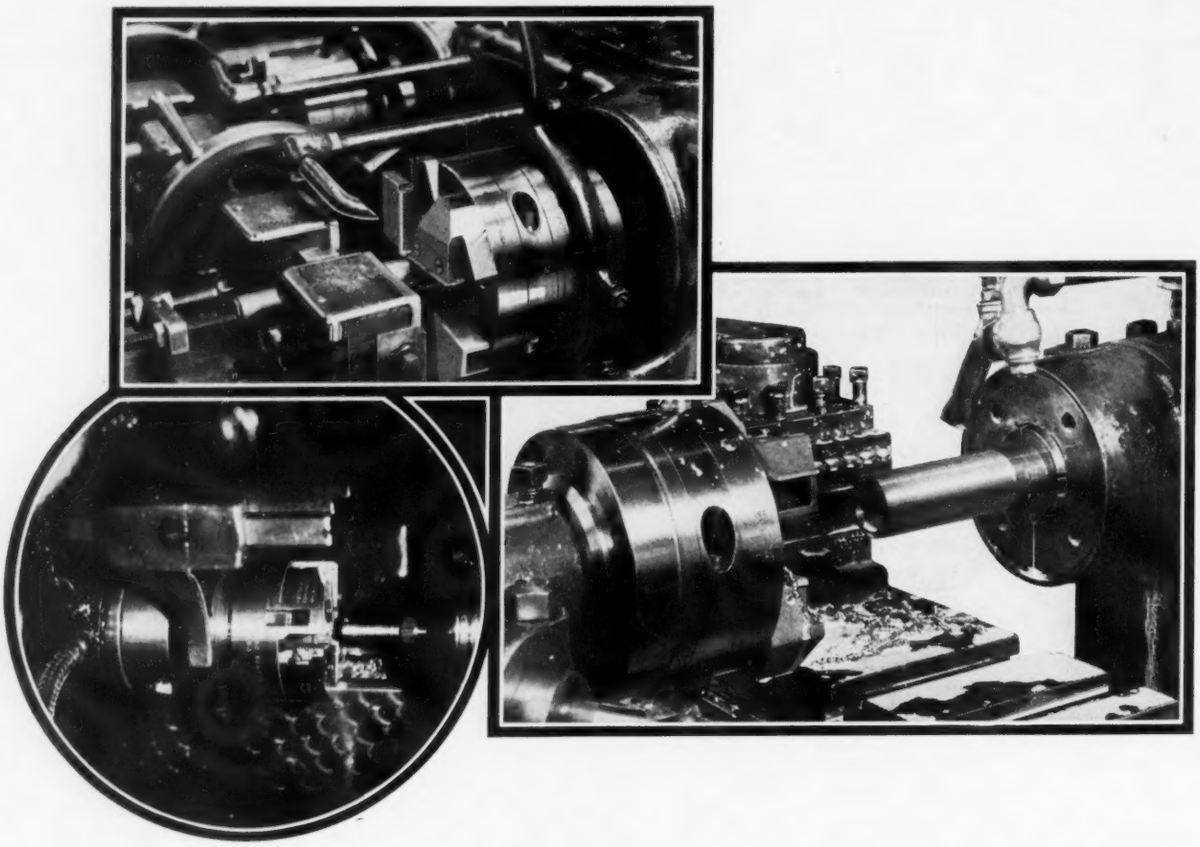

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